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ABSTRACT

Summaries of classroom research studies conducted in Finland on the development of educational aims are presented. Papers in this document deal with: (1) an overview of the purposes of the research project; (2) cognitive processes in classroom verbal interaction; (3) taxonomy of physical education; (4) objectives of religious education; (5) teacher evaluations of the importance and realizability of goals in home economics instruction; (6) the qualitative need for education in forest examinations; (7) objectives in foreign language (English) instruction; (8) objectives of mathematics teaching; (9) objectives of music teaching in secondary schools; (10) aims of visual art education; (11) background of the teaching of history; and (12) aims of biological and geographical education. The findings and research strategies are compared and analyzed in a concluding summary. (FG)

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RESEARCH BULLETIN 60

Erkki A. Niskanen
& al.

RESEARCH PROJECT ON EDUCATIONAL AIMS

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Each of the contributors is responsible for the content
and linguistic form of the paper.

PREFACE

During the last few years a reform of the whole educational system in Finland has been carried out, an essential part of which was the development of educational aims. In this situation I considered it very important to begin studying the aims. I drew out a research plan and started a project with a research team, the members of which represented different school subjects. In my opinion it was important to have subject specialists to investigate subjectwise objectives. With the research plan as a basis each researcher carried out his/her own share. There was much that contributed to the success of the project. Some of the researchers carried out their studies to fulfill post-graduate requirements leading to licentiate or doctoral degrees. Others were university teachers doing research as part of their academic duties. A few have received grants from different foundations. The majority of studies have been published in Finnish, few, however, in English. The present publication, consisting of the English summaries of the studies, is meant to serve the interests of a wider international audience.

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ERKKI A. NISKANEN

ON THE STRATEGY OF RESEARCH ON EDUCATIONAL AIMS

The study of educational aims is not of a very recent origin. In Finland they have been dealt with in a comparatively specific way in the debate on education towards the end of last century. Educational aims have served as the basis for drawing up the sectors to be concentrated on in education. In 1974 the committee appointed to develop the nationwide curriculum summed up the suggestions concerning educational areas in Finland and stated that there is a comparatively great unity between the areas. Why is it then that we have considered it necessary to start a project for investigating educational aims?

One of the main reasons is the fact that with the Finnish educational system being reformed as a whole at present, it is necessary to introduce information given by behavioral sciences as the basis of educational aims and use it innovatively when new aims are being developed. A special function of educational science is to develop aims for different educational sectors. While observing the way in which educational aims are developed in Finland we could not help noticing that it has no connection whatever with educational science or pedagogical expertise. We consider it important that the development of the foundations of educational aims should be supported by necessary scientific information.

On the other hand, the full development of individual personality is today regarded as one of the most important general aims of education. The educational-aims project considers it of great importance to present such a wide scope of aims that they would cover the whole of personality.

An attempt is also made within the project to specify the expression of aims and objectives in such a way that the terms

used would have as exact equivalents as possible in behavioral sciences. On the other hand, an attempt at specification is made by the use of theoretical foundations, models or paradigms, which guide the study of the whole area of educational aims as well as that of separate individual objectives.

Educational aims and objectives are, however, too wide phenomena to be investigated as such. They had to be divided into smaller working units for research purposes. These smaller research units were based on individual school subjects. This decision can be criticized because it could be seen as leading to a subject-centered curriculum. However, at no stage has the project guided the research towards a subject-centered curriculum in particular. The subject-centered parts of the project serve only as an intermediate stage in the research. After they are finished, the aims and objectives will be summed up to form larger units, which will yield parts concerned with general aims as well as those concerned with subject-specific aims and objectives. In developing aims our main concern is that they should cover the whole personality.

One of the reasons for starting the educational-aims project has also been the fact that there seems to exist a gap between the expression and the implementation of aims and objectives. An attempt is made within the project to develop aims and objectives in such a way that they would predict the implementation. The demand on the connection between the aims and their implementation has led us to develop planning methods from the aims and objectives to their implementation. Thus a central methodological problem is, as a matter of fact, how to develop methods for curriculum planning. At the first stage we have restricted the study to deal with aims and objectives only. The next stages will be concerned with questions of curriculum development.

We have divided the central phenomena of the development of educational aims and objectives into units of their own within

the project. These units are as follows: (1) stating the aims and objectives, (2) rating them in terms of certain criteria (e.g. importance, ease of implementation), (3) giving them a proper sequence as regards pupils of differing ages, and (4) the priority of aims and objectives in relation to those of another area. When educational aims are being planned one should give attention to certain facts by which we mean e.g. regularities of learning and the development of an individual, his educability, personality and motivation. On the other hand, attention must also be given to decisions, made by society, concerning education. The facts will form the focus of the project. As regards decisions, an attempt will be made to provide decision-makers with information on the foundations of aims and objectives and to investigate the decision-making process itself.

We can sum up the main reasons for starting the project as follows:

1. Information offered by behavioral sciences will be applied to the development of the foundations of educational aims and objectives.
2. An attempt is made to devise methods for the development of aims and objectives and the whole of curriculum.
3. An attempt is made to offer suggestions based on facts and research results for the development of aims and objectives and the curriculum.
4. Information will be offered for decision-making.
5. Decision-making process will be investigated.
6. Aims and objectives will be developed for differing educational sectors.
7. The aims and objectives that have been developed will be experimented and, if necessary, modified.

Two solutions concerning research strategy have been made within the project. One is concerned with the theoretical foundations and the other with the research methods that have been used. These solutions are concerned with the project as a whole; the solutions made within each of the individual studies are based on the specific problems of the respective studies and may, consequently, be different from those concerning the project as a whole.

Theoretical solutions have been made concerning the choice of the background theory. According to Malinen, who has dealt with the theoretical foundations of the curriculum, curriculum theories are, to a great extent, specific to society. The part dealing with facts is based on theories dealing with individuals. There is no theoretical monism prevailing in the studies of different fields. We have, however, considered it necessary, from the point of view of the project as a whole, that Guilford's structure of personality and the Bloom and Krathwohl taxonomies should be used as a theoretical framework in the most central parts of the project. The area of aims and objectives is so wide that the phenomena cannot be sufficiently dealt with on the basis of one single theory, but there is a need for a greater number of theories, models or paradigms.

The other solution concerning the strategy of research deals with the way in which aims and objectives are formed. The two alternatives that were discussed were the inductive and the deductive strategy. We have mainly used the deductive strategy, in which the development of aims and objectives starts from theoretical foundations, from which we derive structured areas having their equivalents in more comprehensive aims. It is the experts who form the aims starting from the theoretical foundations, making use of logical analysis, information offered by behavioral sciences, earlier information on aims and objectives, and decisions concerning them, trying to provide the aims and objectives with an innovative frame. The deductive strategy has been resorted to for the following reasons. It enables us to make use of the theoretical framework which gives a structure to the area of aims and objectives. It guarantees the inclusion of innovative frame. It further enables us to specify the expression of aims and objectives, provided that theoretical foundations are available, as the case is with theories focussing on individuals. Theoretical notions can be expressed as more and more specific sub-goals, which have their equivalents in more comprehensive aims. The deductive method serves also the present situation at schools more efficiently, since teachers are able, through their previous training, to try to implement such aims and objectives that have

not been specified in great detail. Based on the training they have received they are able to formulate more concrete objectives that can be implemented within the framework of the more comprehensive aims and objectives.

The deductive strategy when used in forming aims and objectives has also its drawbacks, which we try to avoid in the following way. First, an attempt has been made to have teachers and other experts rate the aims and objectives that have been formed deductively. It is thus possible to get feedback to the following problems: the implementation of aims and objectives, the way in which the statements are understood and the scope they are considered to cover. The deductive method must be completed by other means. Before the stage of implementation it has to be completed by experimentation. It is the purpose of the project to get experimental results of aims and objectives before their application in practice. The deductive method will further be completed by means of research on the scope they are to cover, their priority and sequencing, evaluation and innovation.

Recently we have been particularly concerned with developing the educational-aims project: theoretical foundations of research have been discussed as well as terminology, theories, taxonomies, developmental strategies of aims, objectives and curricula, and the relationship between objectives and their implementation. A more specific definition of aims and objectives is important as a theoretical and operational phenomenon. In our opinion, aims and objectives must be considered multi-dimensional. This is what has been attempted at in the project. The multidimensionality of the phenomena to be investigated forms the basis of multidimensional theories.

We consider it a central problem in studying aims and objectives to develop scientific techniques for dealing logically with the phenomena. This means that while making logical decisions we should also be able to develop systematic ways of progression. At the level of implementing aims and objectives we consider it a problem to know how to retain in the decision-making process

those facts that are really crucial among all the facts produced scientifically. This can only be achieved by examining the decision-making process concerning aims and objectives. In curricular research a central field of study is the process by which decisions concerning curricula are made. A central problem in studying educational aims is how to bring together the results obtained in different areas. This research is out of necessity the kind of activity in which widely differing facts are brought together to form a whole. In cases like this the subjective interpretations of a researcher or research team can cause problems. A further problem within the studies of objectives in the project, as well as within the expressed aims and objectives themselves in Finland, is the fact that no indication is given as to what kind of aims and objectives should be developed. An essential further task in the project is to express restrictions concerning certain aims and objectives. Negation has not been much used in statements of objectives in recent research nor in objectives officially expressed in curricula. One of the biggest research problems, in our view, is, however, the fact that the area of personality which in present behavioral research has been described as personality is too narrow a concept from the viewpoint of aims and objectives. Aims of education are much wider than the concept of personality given to us by behavioral sciences. Thus another central further task is the study of personality for the purpose of widening the area of educational aims. This aspect of the project approaches basic research.

MIKKO ISKALA

THE COGNITIVE PROCESSES IN CLASSROOM VERBAL INTERACTION

Research part I: The preferences of teachers concerning the cognitive process in the structure of teachers' educational aims.

Research part II: The cognitive processes in classroom discussion and their relation to teachers' determination of aims.

Research part I is a dissertation and is reported on below.

Research part II is a manuscript, at present being completed by the author.

1. The theoretical background of the study

The study deals with teachers' opinions on the aims of the various levels in the hierarchy of aims, and the choices regarding the cognitive processes with the teaching of different kinds of subject matter in mind.

The aims are understood in accordance with the schematic structure of the cognitive psychology model in STOTLAND & CANON (1972), in which various kinds of aims differing in terms of function are articulated as dynamic factors, linked to the teachers' social field. It is assumed that in addition to the aims, the choices of individuals to be tested also concern the values in the background of the aims, although these values are not clarified in the framework of this study.

The set of aims regarding the cognitive process is based on the GUILFORD Structure of Intellect model (1967). In drafting the aims (JAMU) used in the questionnaire the ASCHNER & GALLAGHER SYSTEM taxonomy was relied on to a great extent for describing the teaching process. Themes from religion, literature and ethics were chosen for evaluation by the teachers. Narrative-type entities, in which there is both factual material and fictional material, provide an opportunity for use of thought processes which are diverse and interchangeable.

The general aims are from the aim study by NISKANEN (1973a). They are based on the taxonomy of BLOOM AND KRATHWOHL and on the SI-theory of GUILFORD. The per-subject goals are from the Finnish comprehensive school curriculum (POPS), on the basis of the analysis of HAKKARAINEN (1971 a and b, 1972).

As a result of the equal interval sample taken, 83 teachers of religion, 32 of Finnish, and 83 general subject civic school teachers were chosen for the study.

2. The purpose of the study

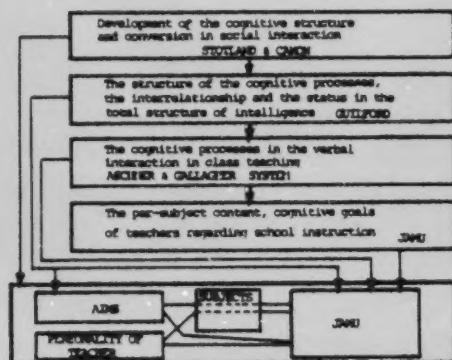
The purpose of the study is to determine the preferences assigned by teachers to the cognitive processes used in teaching narrative-type material, their structure, and also their relationship to the teachers' other goals.

Component tasks:

- (1) What cognitive processes do the teacher groups consider worth trying to achieve (comparison of the level of preferences and structure of different groups)?
- (2) Is there a difference in the priority given thought process with respect to different kinds of teaching material?
- (3) What background variables explain the aim choices in question?
- (4) How do the general aims and the subject goals reflect the cognitive processes in the teachers' determination of priorities?

The background and tasks of the study, and the research scheme appear in figure 1.

Figure 1. The theoretical background of the study charting the preferences of teachers regarding cognitive processes and their relationship to aim preferences.



3. Results of the study

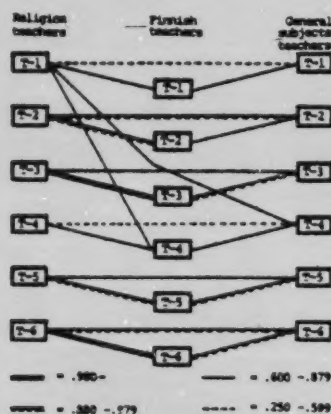
The extensive material obtained was treated with the aim of collecting detailed information, but also with that of clarifying the structural characteristics of the evaluations.

By means of factor analysis (principal model, Varimax-solution) the following dimensions were isolated:

T-1	"ETHICALITY"	401
T-2	"GENERAL ADAPTATION"	402
T-3	"INDEPENDENCE OF THOUGHT"	403
T-4	"FIRM CONVICTION"	404
T-5	"RATIONALITY"	405
T-6	"MENTAL HEALTH"	406

Factors T-2, T-3 and T-6 are formed primarily on the basis of the general aims of school education; T-4 and T-5 are pre-subject aim factors. Factor T-3 is related to the aims of the cognitive domain of education. T-2 and T-6 are factors in the affective domain. No aims of the psychomotor domain were included in the aims being evaluated.

Figure 2. Aims of the teacher groups. Correlations of the factor structures on the basis of the transformational matrices.



In comparing the factor structures of the various teacher groups by means of transformation analysis (MUSTONEN 1966) the following conclusions can be drawn from the findings:

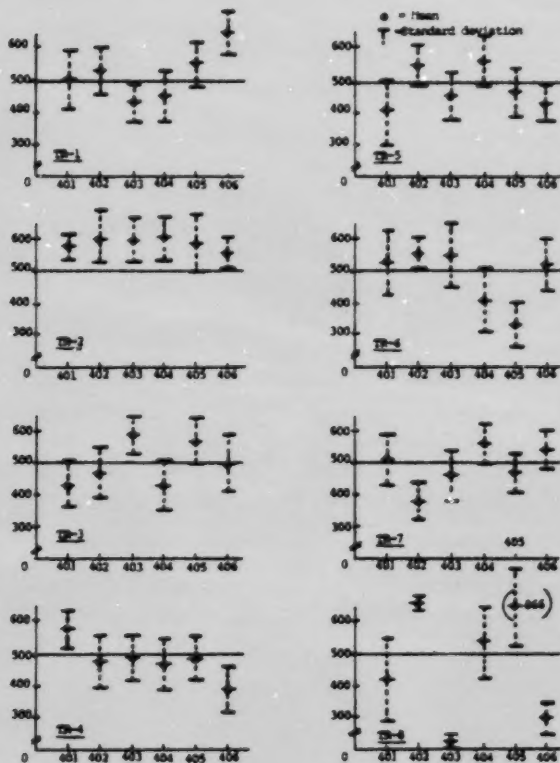
- (1) In contrast with the other teacher groups, ethical aims for religion teachers were connected with the teaching of religion. For general subject teacher the Christian faith aim area (a part of the aims of religious instruction) is similar to the ethical aims of religion teachers.
- (2) In the opinions of religion teachers the aims of firm conviction primarily concern the fostering of faith. For teachers of Finnish, firm conviction was primarily ethical in content.

(3) There were differences in emphasis for the various teacher groups. The differences are relatively small, but still indicative.

A comparison of the evaluations of various teacher groups shows that the duty of teacher best explains the differences in mean values between groups.

By means of grouping analysis, homogeneous groups from the entire group of test individuals were formed on the basis of the aim evaluations. Figure 3 provides a graphic description of the group indexes.

Figure 3. Aim groups. Per-group averages and mean deviation.



The factors obtained described on the one hand the thought process which was the object of evaluation, and the other hand the subject content in connection with which the evaluation was to be made.

In the opinion of the author, the factor structure obtained indicates that

- (1) the conversion of the AGS taxonomy drafted on the basis of GUILFORD's theory has, at least on the whole, proved a successful description of the cognitive process aims of classroom teaching;
- (2) the preferences concerning the cognitive processes can form a model parallel to the GUILFORD Structure of Intellect model in the teacher's aim structure;
- (3) teachers can conceive of the categories presented to them as mutually exclusive and see them as relevant aims;
- (4) preferences the aims concerning the teachers' cognitive processes is closely connected with the subject to be taught.

When transformation analysis is performed in order to compare the factor structures between various teacher groups, it is clear that the best correlation is among the factors of cognitive memory and convergent thinking, between the different groups (J-1, M-2 and M-4). The most diffusion, perhaps because of the effectiveness, is the A-6 correlation in a comparison of teachers of Finnish with other groups. Taken as a whole, the evaluations of religion teachers and teachers of Finnish were best correlated, followed by the evaluations of teachers of Finnish and general subjects. The configurations for religion teachers and general subjects teachers were farthest apart.

The means and standard deviations of the thought process preferences of the homogeneous groups TR-1 - TR-6, computed in accordance with the aims, appear in the enclosed figure.

Who was placed in the various aim groups? What kind of groups were formed? Verbally, the groups and their members can be described in the following manner:

Group	TR-1	"MENTAL HEALTH" (T-6) Female teachers
Group	TR-2	"ALL CONVENTIONAL AIMS" (T-1 - T-6) Experienced teachers (considerable seniority)
Group	TR-3	"CRITICALNESS" (T-3, T-5) Young female teachers of Finnish
Group	TR-4	"MORALITY" (T-1, T-6) Teachers of general subjects and Finnish
Group	TR-5	"RELIGIOSITY" (T-2, T-3) Male teachers of religion and general subjects
Group	TR-6	"UNCRITICAL ADAPTATION" (T-2, T-4, T-5) Older teachers
Group	TR-7	"INDIVIDUAL CENTERED RELIGIOSITY" (T-2, T-4, T-6) Religion teachers

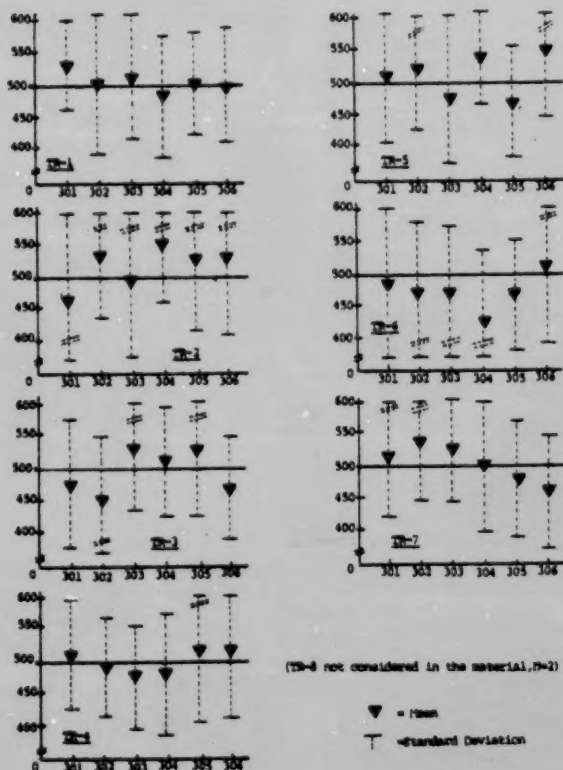
Factor analysis of the preferences concerning cognitive processes produces the following factor structure (principal axes model, Varimax solution).

J-1	"APPLICATION IN TEACHING VALUES AND PRINCIPLES"	(301)
M-2	"MEMORY OF CONTENT OF STORIES"	(306)
U-3	"EXPLICATION OF NEW THEMES"	(303)
M-4	"MEMORY OF CONTENT OF BELIEFS"	(302)
A-5	"ANALYSIS AND EVALUATION OF STORIES"	(305)
A-6	"EVALUATION OF BELIEFS"	(304)

The following interpretation can be used for the narrowly described factors on the basis of Guilford's theory:

M-2 and M-4	MEMORY, COGNITION
J-1	CONVERGENT PRODUCTION
A-5 and A-6	EVALUATION
U-3	DIVERGENT PRODUCTION

Figure 6:1. The means and standard deviations of the priority evaluations concerning the cognitive processes of the aim groups



Discriminant analysis of the selections concerning the cognitive processes for the location of an individual group and also an individual member performed in discrimination space (COOLEY & LOHNES 1962). Location of the aim groups in the field formed by the two discriminant analysis vector areas appears in the figure below.

Figure 4. The location of the aim groups (TR-1 ... TR-7) in the discrimination space of JAMU-selections. (Those teachers whose class lessons were analyzed with AGS were marked with the letters A ... I under the groups. None of the teachers involved in the recording sessions "landed" in groups TR-3, TR-4 and TR-7, Research task II).



If the parts of the field formed by the vectors are named in the manner indicated in the figures, according to the discrimination direction of the discriminant vector, the aim groups are located in the following manner:

- field I "LEARNING BY ROTE": The group TR-4 "MORALITY"
 field II "ADOPTION": The groups TR-2 "ALL CONVENTIONAL AIMS",
 TR-5 "RELIGIOSITY"

field III "ACTIVE CREATIVITY": The groups TR-1 "MENTAL HEALTH", TR-3 "CRITICALNESS", TR-7 "THE INDIVIDUAL CENTERED RELIGIOSITY".

field IV "APPLICATION": TR-6 "THE UNCRITICAL ADAPTATION"

Of those located in the same field, TR-3 stresses active creativity the most. Both TR-1 and TR-2 are located more at the end of useless memorized knowledge of vector 1. TR-7 emphasized active opinion-forming the most. It should be noted that a decision as to whether TR-1 and TR-7 belong to field II or field III must be made in connection with drawing the vectors.

4. The research findings and their significance

Thus the aim preferences have their own relationship to the kind of cognitive process the teacher tends to consider important in classroom discussion. This is easy to understand on the basis of scheme theory. The attitude-type opinions are interrelated, forming a close structure in which there is a certain consistency.

The study also provides detailed information on how the various teaching contents affect teacher opinions on the importance of various cognitive processes. Part of the subject matters is to be learned by rote as such (the important current ethical problems of today and the solution models and the important, simplified subject entities of the Christian faith).

The results of the study are important primarily as an explanatory factor providing basic data. In practical terms, they are significant for teacher training, and particularly for practice teaching. The results can also be applied in preparing teaching material. Various thought processes can be used in classroom study work; the study also provides hints for a determination of formal teaching goals.

5. Plans for further research

Nine teachers were chosen from the aim groups (TR-1 to TR-7). A total of 60 of their classroom lessons were recorded. These

classroom lessons were analyzed using AGS taxonomy. The study explains the typical methods of different teachers in stimulating various kinds of thought processes. The question of the existence of a difference between various subjects and subject areas with regard to the kinds of cognitive processes used was also investigated. In addition to the per classroom lesson and teaching-subject variables, the location of the teachers in the aim and JAMU evaluations in relation to other respondents also served as an explanatory variable.

R e f e r e n c e s

- Aschner, M.J. & Gallagher, J. et al. 1965. A system for classifying thought processes in the context of classroom verbal interaction. Chicago: Institute for Research on Exceptional Children. University of Illinois.
- Bellack, A.A. (Ed.) 1967. Theory and research in teaching. New York: Teachers College Press, Columbia University.
- Bloom, B.S. (Ed.) 1965. Taxonomy of educational objectives. Handbook I: Cognitive domain. New York: MacKay.
- Cooley, W.W. & Lohnes, P.R. 1962. Multivariate procedures for the behavioural sciences. New York: John Wiley & Sons.
- Guilford, J.P. The nature of human intelligence. New York: McGraw Hill.
- Hakkarainen, P. 1971a, 1971b, 1972. Comprehensive school aim studies I, II, III. Research commentaries 100, 114, 149. Jyväskylä: Pedagogical research institute.
- Iskala, M. 1974. Preferences concerning cognitive processes in teachers' aim structure (dissertation). Helsinki
- Karma, K. 1974. Describing the cognitive features of the teaching event with a converted Bellack-classification system. Licentiate study. Library of the department of pedagogy. Helsinki University.

- Mustonen, S. 1966. Symmetrical transformation analysis. Research centre for alcoholic policy report no. 24. Helsinki.
- Niskanen, E.A. 1973. Research on educational aims. Research report no. 3. Department of pedagogy. Tampere University.
- Stotland, E. & Canon, L.K. 1972. Social psychology. A cognitive approach. Philadelphia: Saunders.

LEENA JAAKKELAINEN

THE TAXONOMY OF PHYSICAL EDUCATION The Functions of Exercise and Sport

Motion and movement are an integral part of human life. Exercise and sport have many functions. By means of them man can strive toward some aims (objectives, goals), communicate, exchange thoughts and ideas, express his opinions and feelings or be in a close connection with those around him.

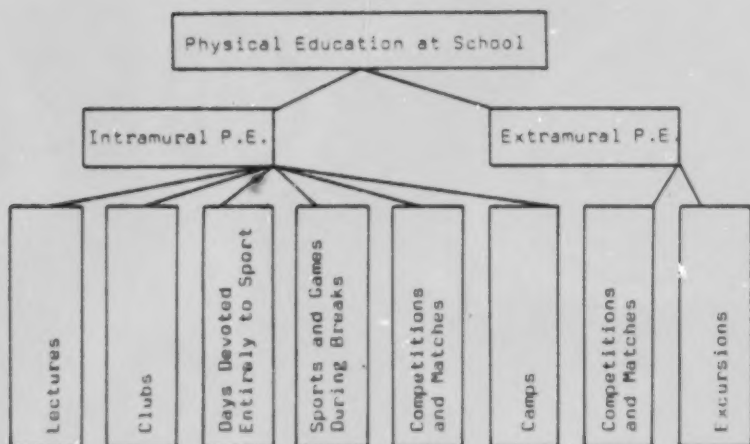
The benefit one can indirectly get from exercise and sport turns out to be beneficial to society as a whole. Those who decide about the matters in society should know the nature and functions of physical education in order to state the position and objectives of it.

The Position of Physical Education in Physical Culture

The physical education school gives has a unique position in the development of physical culture, for instance by acting as a main factor which helps the socialization process. Almost every citizen gets systematic education in exercise and sport at least during ten years. Physical education at school tends to pay more attention than ever to giving fresh impetus as to how to spend growing leisure time. That is why it is not all the same what the goals are like, how they are written, and what possibilities the pupil has to reach them.

What is Physical Education

By physical education we mean the systematic education school gives to pupils. Though physical education is to be found at all levels of education, from infant education to adult education, only the physical education in primary and secondary school are dealt with here. In Finland it means the ages from 6 (7) to 19 (20). Physical education at school can further be divided into intramural and extramural parts. Both of them consist of several kinds of physical education.



The Scheme of the Structure of Physical Education

The Importance of Precise Objectives

After observing the application of the curriculum of Comprehensive School for four years by now, we have noticed that the gap between the general aims of the curriculum and the decisions of the teachers during the lessons is too wide. As a result there may be disagreement between those aims and the activities in the classroom.

If the aims (objectives, goals) are only a row of statements they give no direction as to activity. The memorial published by the Committee for Comprehensive School Curriculum in 1970 (Mistintõ A 4 ja A 5, 1970) remained the connection between the general aims and the main intermediary goals unclear. The whole hierarchy of the objectives (goals) was imperfect. The committee has described and treated different objectives as if they were on the same level for instance 'Interest in Exercise and Sport' versus 'Joy and Recreation'. The main reason to make the objectives of the physical education clearer is that there is a gap between the main general objectives of school and those of physical education.

Up to the present time the objectives of different school subjects are based on the conditions of the subjects themselves. On the whole the greatest lack is that nobody knows, how the general objectives could be reached within each school subject and by means of it. This deficiency is also seen in physical education.

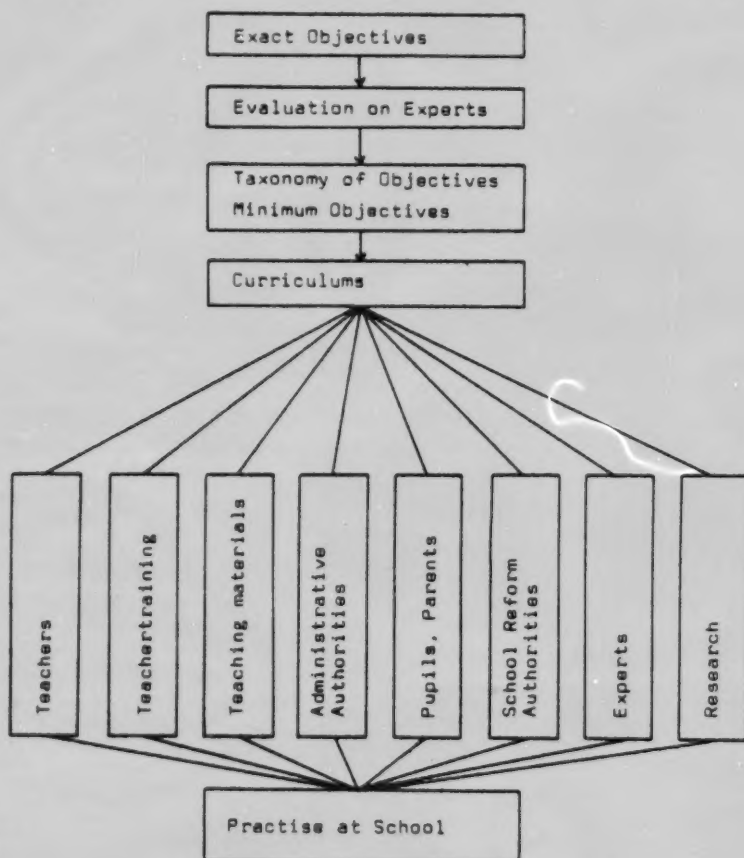
In connection of the definition of the objectives (goals) we need an analysis of them. By means of it I try to make the goals more precise and concrete. We need a better and more systematical manner of describing the goals. The purpose of this study is to clear up the vagueness arisen from treating the objectives just for themselves either as being quite separate or being interlapped. The meaning of goals can be misunderstood if they lack proper connection. In further development there is a need for precise informing the teachers, the pupils, the parents and the different school authorities about the goals to be reached.

As for the latest curriculums one can find out that the problem is not the lacking of the goals but the indefiniteness of them and also an obscure connection between the objectives and the methods. Many teachers have an idea what an ideal curriculum should be like but also a concrete written program which, however, has no connection with the former. On the other hand there are cases, where the objectives are directed from different kinds of sport.

Especially in physical education - where we have quite few written materials - it is important that the objectives are precise and support activity itself. Because the objectives are often formulated dimensionally in other words, there are no clearly defined limits to help to realize that the objectives have been reached, it is necessary to find out so called minimum objectives (goals). Each respective school district must have concrete objectives of its own for every age.

Evaluation has had an excessive part in physical education. The most important function of evaluating - to measure to what extent the given objectives have been reached - has been totally neglected. On the other hand that can be understood because we have not operationalised the objectives so that they could be measured.

In this study neither the process by which nor by whom the objectives are stated is paid any attention to. In my opinion it is only after having exactly and thoroughly produced reports and a hierarchy of objectives accurate enough, that the respective authorities can easily tell which goals are essential and which level could be reached. The precise definition of objectives is important for many reasons. The scheme beneath shows us the connection between this study and practise at school.



Outlines of this study

First Stage

The objectives are completed and a clearer system of describing is to be constructed. This implies

- precision of objectives by studying them from different points of view. This is achieved by the help of adequate literature of reference.
- precise definition of the principal and the part objectives
- to state the connection between physical education both with the general aims of the school and also so called 'passing objectives' for instance social education.
- to define the internal relationships of the objectives in this field.

Second stage

To describe both the order of relative importance of objectives and 'the weight' of them at every grade. This will be made assisted by different interestgroups.

Third stage

The minimum objectives of physical education will be defined for every grade.

The Research methods and the Timetable

In the appendix you will see the hypotheses of the taxonomy. I will try to go further so, that I write the objectives - found from literature of reference - on the slips of the paper. Then I ask the experts to arrange them in the following way.

1. Put away the objectives you cannot see to be the objectives of physical education at the Finnish schools.
2. Arrange the remaining objectives into two piles. To the first put the individual objectives and to the second the social objectives.
3. Arrange the individual objectives into 5 piles

3. Arrange the individual objectives into 5 piles

- o psychomotor objectives
- o cognitive objectives
- o effective objectives
- o traits of character to be reached
- o other

4. Arrange the social objectives into 3 piles

- o ethical objectives
- o social objectives
- o others

5. After this put every pile in order. On the bottom is the object which in your opinion must be reached first (the criteria is, that after it, it is easy to reach the next one), the next is the objective to be reached secondly and so on.

Is there possible differences between men and women, between teachers of different age and between them who take care of the basic training of the teachers and them who take care of their further training.

Persons Subjected to this Test

As experts subjected to this test I have 22 (11 women and 11 men) instructors from our teacher training universities and 22 (11 women and 11 men) teachers who train teachers who are already qualified.

The first part of this study is to be completed in 1976.



MARTTI T. KUIKKA

THE OBJECTIVES OF RELIGIOUS EDUCATION

The most important objectives of the religious education of 6 to 18 year-old pupils on the basis of the evaluations of primary and secondary school teachers.

1. The Framework of the Research

The starting-point of this investigation is the current situation of the curricula. In religious education we have many parallel curricula, among which there is not adequate consistency. Partly this results from the fact that these curricula have been planned at different times. For example in 1973 we had five different curricula for the religious education of 6 to 18 year-old pupils.

These curricula were:

1. The pre-school curriculum (for 5 - 6 year-old pupils) from 1972
2. The primary school curriculum (for 7 - 13 year-old pupils) from 1952
3. The compulsory school curriculum (for 13 - 15 year-old pupils) from 1954
4. The secondary school curriculum (for 11 - 18 year-old pupils) from 1966
5. The comprehensive school curriculum (for 7 - 15 year-old pupils) from 1970

In the 1970's all schools will gradually adapt the last mentioned curriculum. In this plan we can differentiate seven groups of objectives. These are: the development of the personality, the Christian tradition, international education, ethical and social education, the examination of the religious condition in our own country, the pupils' mental health, the development of a critical attitude. In Finland we have confessional religious education in our schools. That is why we have three curricula,

one for the Lutheran pupils, one for the Orthodox pupils and one for pupils who do not take part in religious education. These pupils receive education in the history of religions and ethics.

The objectives of religious education have been studied relatively little. Religious thought has been studied by Ronald Goldman (Goldman 1961, Goldman 1965). Harold Loukes has examined the religious problems of adolescents (Loukes 1961, Loukes 1965). Finnish investigations have concerned the opinions of primary school teachers about the objectives of religious education (Tamminen 1967). One study examines the attitudes of students towards religious education in secondary school (Sappo 1971). In addition there is one entitled "The Cognitive Processes - the Preferences in Teachers' Rating of Objectives" (Iskala 1974). Tamminen has also studied the lifeissues of the children and young people in religious education (Tamminen 1975).

These previous investigations concern only part of the objectives of religious education. Thus the main problems of this investigation are the following:

1. to state the most important objectives of religious education for the four age groups, that is, 5 - 8 year-old (pre-school), 9 -10 year-old (primary), 13 -15 year-old (secondary) and 16 -18 year-old (high school);
2. to state the general objectives of religious education, which are typical for the several age groups;
3. to study what factors effect the teachers' ratings in primary school and in secondary school;
4. to study which objectives the matriculation candidates rated most important. What factors effect their ratings?
5. to study the use of the psychological taxonomies in the investigation of the objectives

This investigation does not explain the confessional syllabus which is determined by the school-law.

The substance of the objectives is very essential to the curriculum. The objectives both guide the learning-process and establish criteria for its evaluation. Thus the research on educational aims is a very important part of the school-reformation (Niskanen 1973).

The objectives of religious education reflect particularly clearly different values. The objectives can be stated in many ways. One way is as a hierarchy of religious, ethical, social and emotional values.

They can be stated as subject-centered objectives in theological terms. Another way is to state the objectives as changes in the pupil's behaviour. This form is used in the psychological taxonomies.

In this investigation the objectives have been stated as changes in the pupil's behaviour and have been developed towards a pupil-centered curriculum.

This decision has two bases. The starting-point is the same as in the comprehensive curriculum. Secondly, earlier research has not made much use of the psychological taxonomies. Particularly they have not been much applied to the objective research of religious education. In this investigation two psychological taxonomies are used, namely the cognitive domain and the affective domain.

The third taxonomy, which can be called psychomotoric or functional, is being developed.

Karvonen used in his research the third component, the functional one (Karvonen 1967).

The objectives of religious education are traditionally divided into four groups:

religious, ethical, social and emotional.

The groups are not mutually exclusive, but have many connections.

The framework of this investigation can be described in the following way:

The Objectives of Religious Education		The Psychological Taxonomies	
		The Cognitive Domain	The Affective Domain
The religious (29 items)	➤—————➤	➤—————➤	
The ethical (10 items)	➤—————➤	➤—————➤	
The social (9 items)	➤—————➤	➤—————➤	
The emotional (7 items)	➤—————➤	➤—————➤	

According to this frame work a representative list of objectives was made:

1. The psychological taxonomies

Bloom: The Taxonomy of Educational Objectives, Cognitive Domain (1956)

Krathwohl-Bloom-Masia: The Taxonomy of Educational Objectives, Affective Domain (1964)

The objectives of religious education were taken from the above mentioned curricula. Thus a list of 70 objectives was formed for the preliminary investigation.

2. The method of the investigation and the sampling

In this investigation the teachers were asked to evaluate the importance of each objective on a scale 1-5 in each of the age-groups. In the scale 1 = little important, 5 = very important. The teachers were asked to make evaluations so that they were near a normal distribution. In the preliminary investigation three groups evaluated the list of objectives.

These groups were the students of the Department of Teacher Education in Helsinki, teachers and writers of religious textbook. The groups also gave verbal information. In the definitive list of objectives the number of the objectives were to be limited. In the parallel statement of objectives the larger part were to be left out. The questionnaire included 56 objectives.

The test group consisted of 150 primary school teachers and 150 teachers of religious education in secondary school. This choice was based on the fact that these teachers know the objectives of religious education well and thus they could evaluate their importance for the pupils at different ages. The choice was a systematic sampling from the register of their own trade union. The purpose of this sampling was to confirm the ratings for all age-groups. The percentage of the returned questionnaires was over 80 (Kuikka 1974, 1976).

3. The Analysis of the Results

The reliability was calculated in both teacher groups separately. The correlations were over 80. This indicates that the teachers' ratings are very unanimous. The high correlation indicates also that the rating method used does not lead to large differences in such a relatively homogeneous, educated group as the teachers. The validity of the investigation was defined as content validity. An attempt was made to confirm this in three different ways. Firstly, most of the objectives were derived from the present curricula. Secondly, the preliminary investigation sought to find the deficient relevant goals. Thirdly, the researchers controlled the final list of objectives. The purpose of this investigation is to find most important goals in the religious education of the four age-groups on the basis of the teachers' ratings.

To analyse the results, the mean values, their dispersion and the significance of the differences in the mean values were counted. The correlation-matrices give information about the connection of the objective-ratings. The factor analysis is aimed to find certain large groups of objectives. Its use creates a problem, because the scale (1 - 5) was used in the ratings. The factors were defined on the basis of mutual correlations of the goal-ratings. These factors do not signify the importance of the goal-groups in confirming the rating-scale, which has an effect on the explanation of the goals for each age-group. Factor-analysis has been used in similar investigations (Heinonen 1968, Heinonen-Kari 1973, Leino 1973). Karvonen found in attitudinal research that

by factor-analysis the factors were formed primarily according to the attitude-objects, when the so-called content-factors are formed, and only then the real component-factors (Karvonen 1967, 41-43).

The third test group consisted of 354 matriculation candidates, selected from secondary schools in various parts of the country. The investigation was conducted at the beginning of their last school year. The list of objectives was the same as for the teacher groups (Kuikka 1979).

4. The Results of the Research

4.1. The most important Objectives of the Four Age-Groups

The main purpose of this research was to seek the most important objectives of religious education for the four age-groups. In the education of 5 to 8 year-old pupils, the fifteen most important objectives were all within the affective domain. This indicates that the essential objective in education at this age is both attitude-formation and the readiness for religion. In the religious area high value was set in developing an affirmative and secure image of God, prayer, the experience of the sacred and respect for religious values. The secondary school teachers preferred to introduce pupils to the exemplary characters in the Bible and the respect for the religious beliefs of other persons. In the ethical-social area high value was placed on charity, respect for the home and parents, the ability to co-operate, respect and tolerance of the primary rights of other persons. In the emotional area the most important objective was to support the pupil's mental health, the self-confidence to know one's own worth and to take pride in one's own work.

In the education of 9 to 10 year-old pupils the secondary school teachers preferred to foster the secure image of God, while the class teachers placed more value on the pupil's mental health. The other central objectives were the same as those of the previous age-group. All the most important objectives were within the

affective domain. It was interesting that ecumenics was not highly valued for this age-group. This might result from the fact that ecumenics has not been included in the curriculum of religious education at this age-group before the introduction of the comprehensive school (1970). Secondly, this indicates that there are many different opinions about the ecumenical concept among teachers.

The different groups of teachers however placed different value on some central objectives. The secondary school teachers preferred the special objectives in accordance with the subject curriculum, the primary school teachers preferred the general objectives of education which can be applied to religious education.

The central objectives in the education of 13 to 15 year-old pupils included only two objectives in the cognitive domain, namely to know the foundations of Christianity and the Ten Commandments. The religious objectives can be divided into four groups: 1) The individual's attitude towards God (for example, prayer); 2) Christian-ethical attitudes (responsibility, charity); 3) tolerance (respect for religious beliefs); 4) a view of life. The secondary school teachers set much more value than the class teachers on the last mentioned objective. Among the ethical objectives most valued were charity, responsibility and behaviour according to one's conscience. In the education of 13 to 15 year-old pupils another objective was to consider and solve the problems of this age-group. This indicates that religious education for this age-group should be pupil-centred.

On the secondary school level we can compare the subject teachers' evaluations with those of the matriculation candidates. The table indicates the rank orders of five most important objectives for both groups.

The subject teachers	The matriculation candidates
1. The pupil's mental health	1. The pupil's mental health
2. charity	2. respect for the primary rights of other persons
3. conscience	3. respect for religious convictions of other persons
4. responsibility	4. self-confidence
5. understanding of the Bible's central message	5. responsibility

The table indicates that both groups valued the effective objectives more than the cognitive objectives. One area of the cognitive domain of the objectives which the subject teachers valued was to know about the religious conditions in our country and the means to lessen human distress. The results of this study clearly indicate that the emphasis in Secondary School educational planning should be shifted from the cognitive domain towards the effective domain. The teachers valued perhaps more the religious objectives, and the candidates more the ethical objectives. The results of this study also show that the ethical objective "respect for the primary rights of other persons" was considered very important by both groups. The pupil's mental health was the most important objective in both groups. Other important objectives for the teachers were tolerance, the moulding of the pupil's own opinions and a readiness to change them. The matriculation candidates consider self-confidence an important emotional objective (Kuikka 1976, Kuikka 1979).

The results of my study indicate that the present curricula should be changed to become more pupil-centred. On the basis of these results one can state that the emphasis of religious education should be changed from the cognitive domain towards the effective domain in the education of 6 - 18 year-old pupils.

The ratings of the matriculation candidates indicates that the youth of München is less interested in religious problems than the Finnish youth (Havers 1972). Gustafsson's study of young people in Sweden gave similar results (Gustafsson 1974).

4.2. The General Objective-Groups

The second purpose of this investigation was to find the general objectives for religious education by factor-analysis. The problem in its use was that factor-analysis is formed on the basis of the mutual correlations of the objective-evaluations. These factors do not indicate the importance of the object-variables, which fact has an effect on the explanation. The factor-analysis gave four groups of objectives. One factor is "the social-emotional objectives". This group includes co-operation, understanding the importance of the law, self-confidence and creativity. The second factor can be called "the tolerance" factor. For example, in the education of 13 to 15 year-old pupils this factor included the introduction to the other religions, different views of life and an understanding of different ways of thinking. The third factor is called "the personal religious assurance". It includes objectives to form a view of life on the basis of the Christian faith, prayer, the experience of the sacred and an understanding of the Bible's message. The explanation of the fourth factor is uncertain. Its label is religious or ethical values. Its content varied noticeably in the different age-groups.

The factor-structure of the 6 to 8 years old was formed differently. Four factors were isolated from the objective-group. The factors are:

- 1) consistent and cumulative teaching
- 2) religious readiness
- 3) social-emotional maturity
- 4) guidance to the Bible

The first factor included the objectives on which the teachers set a quite low value. This point is a result of the method of analysis used. Its label "consistent and cumulative" means that the education of the 6 to 8 yearsold must be based on relevant foundations so that later education need not change, but only complete, enlarge and apply it in new connections.

The second factor includes the most highly valued objectives. At this age the pupils are guided to the fundamental religious

points, the affirmative image of God, the experience of God, knowledge of the Bible's exemplary characters and respect for religious values.

The third factor includes the social-emotional objectives, co-operation, tolerance, responsibility, creativity.

The objectives of the fourth factor are connected with guidance, Christian service and the rituals of the church.

With the factor analysis we can compare the subject teachers' and the matriculation candidates' objective structures. In the matriculation candidates' ratings the factor analysis produced three groups of objectives, namely the religious conviction factor, the ethical attitudes factor and the religious tolerance factor (Kuikka 1979). The structure of the evaluations of the objectives was almost similar to that of the subject teachers in a previous study (Kuikka 1976). One difference factor in the ratings of subject teachers is the religious functional factor. This factor includes charity, the ability to apply the Bible's message to new situations, and to know that the religious education solves today's problems. What the similarity causes? On one hand it is due to the research methods, especially the used rating-scale and the factor analysis. On the other hand, although the structures were similar, the ratings of the single objectives differed very much both between the two groups and within them.

In the matriculation students' groups the value of the background variables as explainers was not clear. It seems that on the one hand the student's own religious convictions and on the other hand his school environment are reflected in his evaluation of objectives.

6.3. The Background Variables

The background variables of the teacher groups were the years of service, the location of the school and the sex. The secondary school teachers were asked if they had teaching practice and the primary school teachers what grade they had and whether they had been trained in a university or in a teacher training college. Matriculation

students were asked about the location of the school, the sex, the profession of the parents, the courses of the secondary senior school.

The older secondary school teachers placed more value on the traditional objectives of religious education, such as teaching the Bible, the experience of the sacred, and religious services. The young teachers set more value on the religious, especially ethical objectives. The old class teachers, more than the young teachers emphasized two objectives: the analysis of religious phenomena and the familiarization with different views of life.

The sex of the respondents did not have a great effect on the ratings. The women teachers valued more objectives like teaching the Bible, prayer, and respect for others' conviction (Kuikka 1974, 1976). The same difference was apparent in the ratings of the matriculation students.

The location of the school had an effect on the ratings of secondary school teachers concerning the traditional goals. The rural teachers, more than the urban teachers, valued goals such as knowledge of the tenets of the Christian faith, respect for others' religious beliefs, appreciation of Christian art, and familiarity with the Bible's exemplary characters. The urban teachers valued more highly social objectives, such as tolerance, development of one's own values and the ability to discuss and solve the problems of one's age-group. The matriculation candidates in rural areas, more than the urban candidates, valued goals such as teaching the Bible, the church rituals and church ceremonies, the knowledge of the tenets of the Christian faith and the personal religious conviction. The urban candidates valued more ethical objectives (Kuikka 1979). The results are similar to those in the earlier studies (Takala-Niskanen 1953).

The teachers who had been educated in a six-year teacher training college, valued patriotism more than the teachers who had been educated in a university. Generally the teachers who had been trained on a university basis valued ethical goals more than the other teachers, such as knowledge of the rules of life and respect for the basic rights of others.

In the matriculation student group the values of the background variables as explainers was not clear. It seems that on the one hand the student's own religious convictions and on the other hand his school environment are reflected in his evaluation of objectives.

6.4. The Use of the Psychological Taxonomies as a Research Method

The psychological taxonomies of objectives help making the goals of the curricula clear. They also help the move to a pupil-centred curriculum. Bloom's taxonomy cannot be applied hierarchically to religious education. Its divisions, synthesis and evaluation do not presuppose knowledge of its lower divisions. This taxonomy proved too narrow when forming all the objectives of religious education. In all the age-groups understanding was evaluated as most important. Analysis and evaluation became more important in the higher age-groups.

The affective domain is closely connected with attitudinal education. This taxonomy also was too narrow in the investigation. Not all the ethical, social and emotional goals were contained in the classes of this taxonomy. Essential goals are excluded, if the taxonomy is used as such.

5.5. SUMMARY

Some conclusions can be made on the basis of the research. Firstly, it seems that the ratings of the teachers have remained almost unchanged in the 1970's (Tamminen 1975, Kuikka 1976, Kuikka 1979). Secondly, as both the teachers' and the students' ratings indicate, the emphasis in secondary school educational planning should be shifted from the cognitive domain to the affective domain. Thirdly, the religious educational planning should be extended so that the student might choose different courses in religious education. The results also indicate that cooperative planning should be developed in the secondary school. Fourthly, the differences which appeared in the teachers' ratings of objectives indicated that the present unification of the teachers' education is a very good policy. The Teacher Education Law, which came into effect in 1971, meant that both class teachers and subject teachers would be educated by the university. The new teacher education started in 1979. The results indicate that there is a need to unify curricula in religious education for the different age-groups. The teachers who teach religious education in the school must receive unified training. The training, which concerns both primary and secondary school teachers, will include the analysis of objectives, the examination of the curricula for the different age-groups, and teaching practice at different levels. The research can be continued in many ways. In addition to teachers and students, the ratings of the two groups should be analysed by: 1) the curriculum planners and the education officials and by 2) the parents of the students. The second theme on which to pursue the research involves accomodating the subject plan to different age-groups and experimenting with these. The third theme involves applying the results to the learning-materials study. The objectives are also the criteria which affect the planning and evaluation of teaching.

B i b l i o g r a p h y

- Bloom, B.S. 1956. Taxonomy of educational objectives. The classification of educational goals. Handbook I. Cognitive domain. New York.
- Goldman, R. 1961. Religious thinking from childhood to adolescence. London.
- Goldman, R. 1969. Readiness for religion: A basis for developmental religious education. 5.p. London.
- Gustafsson, B. 1974. Elevernas livssituation och värderingar. Gymnasie-eleven och livsfrågorna. Stockholm.
- Havers, N. 1972. Der Religionsunterricht - Analyse eines unbeliebten Fachs. München.
- Heinonen, V. 1958. Kansakoulun oppiaineiden arvioinnit. Oppilaitten ja opettajien käsitykset aineiden tärkeydestä, vaikeudesta ja mielisyydestä. (painamaton) Jyväskylä.
- Heinonen, V. & Kari, J. 1973. Numeerisen arviointiasteikon sekä valinta- että kohdeluvultaan määrätyn arviointiasteikon tuottamien tulosten vertailu. Research reports N:o 40. Jyväskylän yliopisto.
- Iskala, M. 1974. Kognitiivisia prosesseja koskevat preferenssit opettajien tavoiterakenteessa. Uskonnonpedagogiikan julkaisuja B I 1974. Helsingin yliopiston käytännöllisen teologian laitos. Helsingin yliopisto.
- Karvonen, J. 1967. The structure causal and change of the attitudes of teacher education students. Jyväskylä Studies in Education Psychology and Social Research 16. Jyväskylän yliopisto.
- Kuikka, M.T. 1974. Uskonnon opetuksen tavoitetutkimus I. Luokan- ja aineopettajien arvioinnit 6 - 16 vuotiaitten uskonnonopetuksen merkittävimmistä tavoitteista. Joensuun korkeakoulu. Kasvatustieteiden osaston julkaisusarja 3/1974.

- Kuikka, M.T. 1976. Uskonnon opetuksen tavoitetutkimus II. Opettajien arvioinnit efektiivisen alueen tavoitteista, peruskoulun uskontokasvatuksen tavoitteista ja opetussuunnitelman kehittämisestä. Joensuun korkeakoulu. Kasvatustieteiden osaston julkaisusarja 29/1976.
- Kuikka, M.T. 1979. Uskonnonopetuksen tavoitetutkimus III. Lukio-
laisten tavoitepreferenssit uskonnollisen, eettisen,
sosiaalisen ja emotionaalisen kasvatuksen alueella.
Joensuun korkeakoulu. Kasvatustieteiden osaston jul-
kaisuja 10/1979.
- Leino, A.-L. 1974. Foreign language curriculum. An investigation
into objectics, achievements and student characteristics.
Research Bulletin 41/1974. Institute of Education
University of Helsinki.
- Loukes, H. 1961. Teenage religion. An enquiry into attitudes and
the possibilities among British boys and girls in
secondary schools. London.
- Loukes, H. 1965. New ground in religious education. London.
- Seppo, S. 1971. Abiturienttien asenteet uskonnonopetukseen.
Jyväskylä Studies in Education, Psychology and
Social research 25. Joensuu.
- Takala, M. - Niskanen, E. 1963. Kansalaiskoulun oppilaiden asen-
teet koulua, yhteiskuntaa ja työelämää kohtaan. KTL:n
tutkimusseloste n:o 8.
- Tamminen, K. 1967. Opettajien käsitys kansakoulun uskonnonopetuk-
sen tavoitteista. Helsinki.
- Tamminen, K. 1975. Lasten ja nuorten elämänskysymykset uskontokas-
vatuksessa. Joensuu.

RAKEL LATOLA

TEACHER EVALUATIONS OF THE IMPORTANCE AND REALIZABILITY OF THE GOALS IN HOME ECONOMICS EDUCATION

The purpose of this study was to find out which teaching goals teachers consider to have the greatest importance and the best chance of being materialized in the seventh grade of the comprehensive school.

The clauses to formulate the goals were chosen from among the general objectives set for the teaching of home economics by the curriculum committee of the comprehensive school. By derivation and by addition of certain subject elements the most concrete clauses were compiled for evaluation. The 150 teachers of home economics who acted as test persons were chosen by lot from communities that adopted the comprehensive school system in the years 1972, 1973 and 1974.

The research was carried out by a mail inquiry in August 1977 and the answering percentage was 88.

To find about the target areas and their structures, a factor analysis was performed. A one-way variance analysis was used to explain the correlations between the factors and the background variables.

The differences in the averages between the compared groups were tested by means of a t-test.

The results reveal that teachers estimated the following goals to have the greatest importance and the best chance of being materialized:

- adoption of a basic knowledge of nutrition and its application
- positive stand toward equal and jointly-responsible distribution of the duties in the home
- recognition of the significance to mental health of family relations and of a comfortable home environment
- development of the ability to work together in varying situations

- understanding the meaning of hygiene in view of health, social contacts and pleasant work environment
- pleasure derived from satisfaction at work

In their evaluations the teachers were rather unanimous as to the importance and materialization of these goals.

The teachers found to be least important and also less apt to be realized the goals that expect the pupil

- to be able to plan his own budget
- to have a basic knowledge of diseases, which are caused by microbes and spread by way of food-stuffs, and of their prevention
- to understand the relationship between alcohol and nutrition.

The goals found to be less important could still be considered significant as such, only not important and realizable in the seventh grade.

The reasons why all the goals were not expected to have a chance of being materialized were primarily the very limited number of teaching hours, too large groups, inadequate teaching facilities: rooms, equipment and materials.

Some goals were also found to be too far beyond the grasp of a 13- or 14-year-old pupil.

Of the background variables teacher training and age, in many cases, proved to have a statistically significant connection with the goals. As the compared groups were, however, rather small, it is not recommendable to generalize.

The order of the goals as to their importance and likelihood of being materialized as indicated by the results can be taken to be one of the starting points for the revising of the goals in home economics education in the comprehensive school and for the definition of the basic objectives.

On the basis of the results it would seem justifiable to intensify in the teacher training the study of the problems involving the setting of goals, the analysis of the goals, the formulation of the goals of different levels, and the direction and operational implementation of the goals towards their realization in practical teaching situations.

Through future researches it should, for example, be checked whether pupils find the same goals important as the teachers do, and whether girls' and boys' opinions differ in this respect. Also, it should be examined which teaching syllabuses would provide the optimum help in realizing the goals that were rated important.

Furthermore, it would be necessary to find out what is really meant by "skills in home economics" and what general objectives of school education are to be attained with these skills, and what part areas in the pupil's personality are to be developed by means of such skills.

JAAKKO LEHTO

THE QUALITATIVE NEED FOR EDUCATION IN THE FIELD OF FOREST EXAMINATIONS

The research is a part of a project started by Professor Erkki A. Niskanen 1973 which investigates educational goals and the objectives of different subjects.

This research adds information to the subject-oriented part of the Niskanen project. It deals with the important or central aspects of forest education in the light of the opinions of foresters, forest technicians and forest work leaders. The basic hypotheses in this research is that the already existing goals of education influence the cognitive structure of the students. Discovering the subject preferences of people with a certain professional education, which has been influenced by working experiences in the same field, enables the goals of certain groups of experts to be examined.

The several fields of teaching (subjects or courses) in forest education were factored into nine broad areas of teaching or emphasis, and were applied to all the groups in this research - foresters, forest technicians and forest work leaders. The rank orders of these teaching areas varied in each of the different professional groups. Three of the most central teaching areas, verbal communication, raw wood supply and administrative skills can be differentiated however, because they ranked in the first three positions for each professional group.

The teaching area named "world concept" (ideology) was considered by all professional groups as the least preferred area.

The agreement in the other areas - ecological welfare, labor laws and agreements, knowledge of forest sector, structuring the knowledge, marketing and planning - was not so high. The opinions within the professional groups differed more in these areas of teaching than in the three most central areas.

Explaining the preferences of central areas of teaching by professional groups using variables describing background, job and attitudes towards the education, it was found that the professional examinations and curricula form a professional ideology. This reflects reinforces different professional roles in society. Examining the educational contents and objectives of different professional groups these can be seen to be highly professionally oriented. However, it can be thought that maintaining strong vocational borders in spite of close professional ties, would, in the long run, be an endangering factor in the development of the whole field. Generalizing different traits in human activity will also demand the generalization of education.

The central meaning behind the teaching of verbal communication can be understood in that theoretical and abstract thinking and verbal readiness (ability) are closely linked together. When the value of general laws and theories increases, the emphasis of verbal communication can be interpreted as a demand for generality of education.

The central meaning behind the teaching of raw wood supply can be explained by the professional role that the older (and anti-) theorists have adopted. The importance of this area of teaching is due to the nature of the general model of organization in the field of forestry.

Demand for administrative skills has become a central issue at the same time as democratic developments in work life. Administrative skills are not purely cognitive, they can also be seen in behaviour.

Those who showed a preference for the teaching of world concept were those who generally preferred a good general knowledge. Older respondents showed a greater preference for this area than

the younger ones. The conclusion was that this area emphasized the need for the opening of broader contacts, an important area of teaching in future.

The research has mainly followed the scientific tradition of analytical philosophy. However, the interpretation and the conclusions are influenced by hermeneutic intentionality.

ANNA-LIISA LEINO

ON THE OBJECTIVES IN FOREIGN LANGUAGE (ENGLISH) INSTRUCTION

The purpose of this paper is to give a brief summary of the studies that form a part of the project and have been published previously. The first studies (Leino 1974, 1975a) deal with the importance of objectives in foreign language instruction as rated by in-service teachers, student teachers and pupils. The questionnaire consisted of linguistic as well as general affective objectives with the former being mainly based on Valette's specifications for second language instruction and the latter on a framework offered by Niskanen. Both teachers and student teachers rated the objectives at the elementary, intermediate and advanced (senior secondary school) level. Senior secondary school pupils were used to rate the objectives of their own level. Teachers and student teachers were discovered to consider objectives connected with spoken language much more important than those connected with written language at each level. The importance of all the objectives was discovered to increase at the higher levels. The results showed a striking discrepancy at general affective aims, which pupils considered far less important than teachers and student teachers.

The importance of general affective aims which is to be seen in the teachers' opinions as well as in the official documents led us to carry out a small study concerning the implementation of these objectives in different foreign language teaching situations as rated by student teachers (1975b). Small-group conversation conducted by a native teacher or the pupils' own teacher and extensive reading taking place in small groups were considered to be the best situations for most of the affective objectives. It is to be noted that research into the problems of affective objectives should take place in real classroom situations and it should be conducted in different school subjects simultaneously in order to get information that could be used for realistic curriculum development.

The latest study concerned the need felt for in-service education by foreign language teachers (Leino 1976). Questions concerning in-service education of teachers have been very urgent in Finland with the comprehensive school reform still going on and all the teachers participating in compulsory in-service education, the purpose of which has been to facilitate the introduction of the new system. There has been a great deal of dissatisfaction among the teachers with this kind of in-service education. The purpose of the study was to find out what content areas foreign language teachers consider important in their in-service education, to what extent teachers agree on the importance of these areas and what background variables explain the differences. The most important items were concerned with maintaining the teacher's own oral ability, teaching the oral skills and written production, evaluating written production and motivating pupils. The least important items were not concerned with foreign language teaching process itself. The analyses also showed that the in-service education of foreign language teachers should be individualized to a great extent.

B i b l i o g r a p h y

- Leino, A-L. 1974. The importance of objectives in foreign language instruction as rated by teachers. Publications de L'association finlandaise de linguistique appliquée. N:o 10. Turku.
- Leino, A-L. 1975a. A comparison of the importance of objectives in foreign language instruction as rated by in-service teachers, student teachers and pupils. Research Bulletin No. 44. Institute of Education. University of Helsinki.
- Leino, A-L. 1975b. Implementation of some affective objectives in different foreign language teaching situations as rated by student teachers. Research Bulletin No. 45. Institute of Education. University of Helsinki.

Leino, A-L. 1976. The need felt for in-service education by foreign language teachers. Research Bulletin No. 46. Institute of Education. University of Helsinki.

ON THE OBJECTIVES OF MATHEMATICS TEACHING

1. Purpose of the Study

The nature and the importance of objectives in educational planning and teaching has recently greatly changed. Although objectives had a prominent position even in earlier times, they were, however, considered to remain relatively stable in the background having practically no influence on the content of teaching (Werdelin 1973, 11-12). Nowadays there is an attempt to regard objectives as active functioning in the curriculum meant for a longer period of time as well as in the instruction planned only for one lesson or a shorter period of time.

Giving the objectives a primary position in the curriculum and teaching has guided research to the direction of objectives themselves and the relevance of the way of expressing them. Experience has shown that objectives have to be expressed on several levels of generality depending on the purpose they are used for. On the one hand there is a need for comparatively general objectives meant for a longer period of teaching; on the other hand, very specific objectives are required for a shorter period consisting of a few lessons. Nowadays there is a general demand for objectives expressed in terms of pupil behaviours (e.g. Tyler 1934; Bloom et al. 1956; Taba 1962; Gagné 1967; Mager 1970; Koskenniemi et al. 1970).

In spite of the central position that objectives have in education there has been very little research into them at the subjectwise level. This concerns mathematics instruction, in particular, in which the main interest has traditionally been in the content. The international study of achievement in mathematics (Husén 1967) showed clearly that in most of the countries participating in the research the objectives of teaching mathematics are

considered to be the same as the content of instruction, which was in no way connected with pupil behaviour.

The present study is a survey research limited to the objectives in mathematics teaching. Its purpose is to find out

- 1) what objectives in the teaching of mathematics Finnish teachers of mathematics consider the most important at the comprehensive school and senior secondary school levels
- 2) do the teachers' notions of objectives contain areas of objectives which are independent of each other and which would form the basic dimensions of the structure (hierarchy) of objectives independent of the school level
- 3) in what way are the basic dimensions weighted in the ratings given by the teachers at different levels of the school
- 4) are there different types of teachers to be found in the notions of the objectives and in what way do these types differ from each other
- 5) is it possible to explain the teachers' notions of objectives and different types of teachers by means of the background variables employed in the study.

The objectives of mathematics instruction are expressed in terms of pupil behaviors but at a comparatively general level without giving the content to be used in achieving the objective. Omitting the specific content was necessary because the purpose was to look for a structure of objectives which could be used in the teaching of mathematics at different levels of the school as well as in different sectors of mathematical education. At the same time it would be possible to find out in what way the objectives of teaching mathematics are connected with the general objectives of education and what objectives are specific to mathematics. It is this aspect that connects the present study with a wider research project of educational objectives (Niskanen 1973).

2. Theoretical Framework

An attempt was made in the research to find out the objectives considered important by the teachers of mathematics in their teaching at different levels. The time and quality of the basic education received by the teachers varied a lot. Also the objectives in teaching mathematics expressed in the curricula for different levels and types of school at different times vary as to both their content and terminology. For this reason finding out the teachers' notions of the objectives proved problematic.

Taxonomies of the objectives in mathematics teaching (Husén 1967; Wood 1968; Wilson 1971) derived from the Bloom Taxonomy were used as the theoretical foundation of the research. The taxonomy developed by Wilson, in particular, offered behaviour categories and terminology suitable for the teaching of mathematics.

The statements of the objectives (N=26) of the questionnaire used in the study were designed to cover the objectives in mathematics teaching expressed in the Finnish post-war reports by curriculum committees, in the official curricula and in the report by the New School Mathematics in Nordic Countries (1967). The terminology was made more homogeneous by expressing the objectives in terms of pupil behaviours. An attempt was also made to express the objectives at the same level of generality, which would make it possible to compare the objectives with each other.

The following background variables were used to explain the teachers' notions of the objectives:

- 1) teaching experience
- 2) studies taken in mathematics
- 3) studies taken in education
- 4) further studies taken in mathematics and pedagogics

- 5) the degree of urbanisation of the teacher's school district
- 6) sex

3. Research Method

Data collection took place by means of a postal inquiry. It consisted of ratings, given by the subjects, of the importance of the objectives at the elementary and advanced level of the comprehensive school and in the general and extended courses of teaching mathematics at the senior secondary school level. The subjects were a random sample of the population of mathematics teachers. The means of the ratings give the order of importance of objectives at different levels with the standard deviations telling about the agreement among the raters.

The structure of the teachers' notions of the importance of objectives was investigated by means of factor-analysis. The factorizations performed for each level did not produce identical structures. Symmetrical transformation analysis was employed to discover the invariant part. This was used as a basis for finding the areas of objectives (in the structures) which would be as independent as possible of each other and which would cover all the levels. Each area of objectives is a combination of objectives belonging to that area and a score of importance describing that area was formed.

The scores of importance of the areas of objectives at different levels form the profiles of objectives in mathematics teaching. Profiles of objectives can thus be compared to each other at different levels as to the form, level and deviation, which makes it possible to follow the change of the profile from one level to another.

The ratings of the objectives given by the subject for different areas of objectives give us a teacher-based profile of objectives.

which makes it possible to compare the teachers' notions of objectives with each other as a whole. The teacher-based profiles of objectives were grouped into different types of teachers on the basis of their similarity. The Euclidian distance d_{mn} between the profiles was selected as the measure of similarity, because the correlations between the objectives were slight. The distance was scaled to the interval (0,1) by means of a linear transformation

$$d_{mn}^{(s)} = 1 - d_{mn}/d_{\max}, \text{ subjects } m, n$$

$$d_{\max} = \max (d_{mn}) \quad (\text{Rummel 1970 p. 501})$$

The similarity matrix of the scaled distances in person-to-person space was factorized to distract the different types of teachers.

Explaining the teachers' notions of objectives in different areas happened by means of regression analysis. The dependence of the types on the background variables was investigated by means of analysis of variance or χ^2 .

The design and results of the research have been published in detail in Finnish (Leino 1975 a, b, c).

4. Results

Data

The randomly drawn sample consisted of 150 teachers from the secondary school mathematics teachers' register, which was not up-to-date because there were 12 replies telling that the respondent had left teaching, or died or that his address was unknown. The percentage of returns was 71. Part of the answers had to be left out on account of missing information, so that the final number of subjects was 89. Data collection took place in the autumn 1973. The splithalf and Spearman-Brown reliabilities of the questionnaire was .75, which is considered to be satisfactory.

Ratings of the Importance

At the elementary and advanced levels of the comprehensive school the most important objectives were ability to compute without making mistakes and skills and knowledge connected with the problems of everyday life. At the elementary level it was also considered important for the pupil to experience joy given by productive work, at the advanced level the pupil should, in addition to that, get used to judge objectively the tasks and results. In the extended course of mathematics at the senior secondary school level the most important objectives were exact formation and use of concepts, ability to work systematically and purposefully and getting used to judge the tasks and results objectively. In the general course at the senior secondary school level skills and knowledge connected with the problems of everyday life, objective judgement and getting used to the language of mathematics were emphasized.

Comparing the objectives of different levels was performed by means of the correlations between the order of importance. The correlations in Table 1 show that the elementary and advanced level of the comprehensive school are very similar ($r = .91$) like the advanced level of the comprehensive school and the general course of mathematics at senior secondary school level ($r = .96$). The objectives in the extended course of mathematics at senior secondary school level deviate strongly from those at the other levels.

Table 1. Correlations between the order of importance of objectives

	Comprehensive school		Senior secondary school	
	elementary level	advanced level	extended course	general course
elementary level		.91	.19	.76
advanced level			.46	.96
extended course				.55
general course				

Areas of Objectives.

The factor-analyses of the importance of objectives performed separately for each level did not result in a factor structure that would have been independent of the school level. Transformation analysis was employed to discover the common elements of the factor-structures. The analysis yielded seven areas of objectives, which have been named and arranged in the following according to the ideas presented in the Bloom Taxonomy.

The cognitive area:

- A. ability to compute and use of basic concepts
- B. comprehending mathematics
- C. application
- D. reasoning
- E. use of language and spatialability

The affective area:

- F. participation and interest
- G. attitudes and habits of work

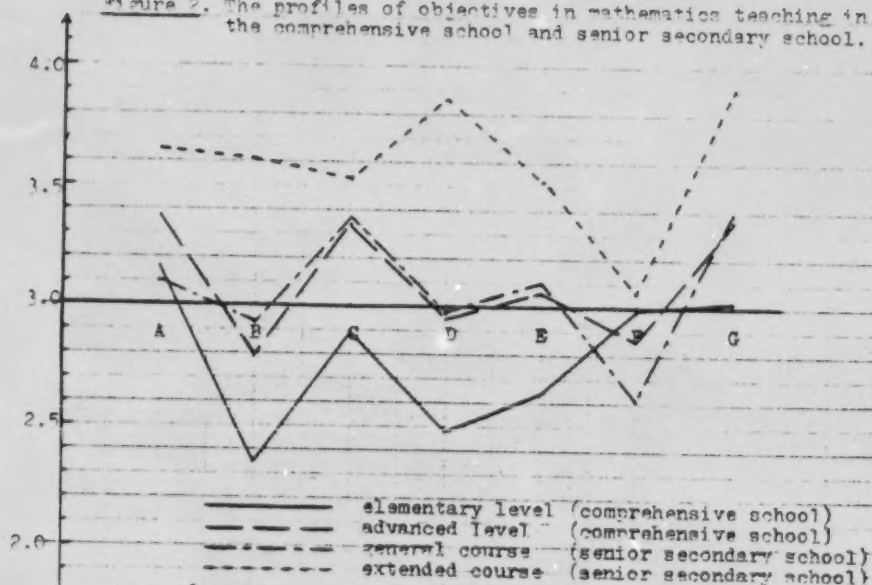
Each area consists of 3-4 statements of objectives. The most important objectives of each area are given in the following:

- A: - the pupil is able to compute without making mistakes
 - the pupil develops exact formation and use of concepts
 - the pupil understands basic concepts and relationships between them
- B: - the pupil develops an idea of mathematics as an instrument for describing theoretically the problems of the environment
 - the pupil understands the deductive nature of mathematics
- C: - the pupil develops knowledge and skills connected with the problems of everyday life
 - the pupil is able to solve mathematical tasks chosen from different fields of life
- D: - the pupil understands order relationships and cause-effect relationships in mathematics

- the pupil becomes familiar with different types of reasoning in mathematics (induction, deduction, analogy)
- E:
- the pupils develops the ability to be clear and brief in expression
 - the pupil understands the importance of language in definitions and reasoning
 - the pupil develops spatial ability
- F:
- the pupil experiences joy given by productive work
 - the pupil develops ability to co-operate with other pupils
- G:
- the pupil gets used to judge objectively the tasks and results
 - the pupil develops an attitude towards mathematics that does not include unnecessary under- or overestimations
 - the pupil learns to work with perseverance and purposefully in mathematics

Figure 2 shows a profile of objectives, based on the different areas, and its changes at different school levels. It is to be seen that at the elementary level of the comprehensive school the most important objectives in mathematics teaching are learning to compute and learning the basic concepts. The two areas of the affective domain are among the most important ones, too, as well as application.

Figure 2. The profiles of objectives in mathematics teaching in the comprehensive school and senior secondary school.



In a very similar way learning the attitudes and habits of work in the affective domain and application and skill in computation in the cognitive domain are the most important ones at the advanced level of the comprehensive school and in the general course of mathematics in senior secondary school. Interest and participation as well as understanding mathematics were regarded as the least important areas.

In the extended course of mathematics in senior secondary school the most important areas were those of attitudes, habits of work and reasoning. The areas of participation and interest remained the least important. Perhaps the most surprising thing was the great emphasis on attitudes and habits of work in mathematics teaching throughout all the school levels. The total

level of the profiles is higher with the level of school, even though there may be a decrease in the importance of some area. The deviations of the profiles at different levels are about the same size. The form of the profiles can be compared by means of product-moment coefficients, for example. Those in Table 3 show the similarities and differences in objectives at different levels (see also Table 1).

Table 3. The Comparison of the Forms of Profiles at Different Levels

	comprehensive school		senior secondary school	
	elementary level	advanced level	extended course	general course
elementary level		.71	-.19	.23
advanced level			.40	.82
extended course				.66
general course				

Types of teachers.

The factorization of the profile similarity matrix used to extract the types of teachers produced four relatively clear groups of subjects. The fifth group was formed of those who remained outside the groups. Each group was considered to represent its own type of teacher. The type of teacher corresponding to the biggest group (N=36) considered the profiles of objectives at different school levels to be very similar. The product-moment coefficients between the profiles at different school levels varied in this group between .62 and .90. This type considered areas A (ability to compute, basic concepts) and C (attitudes, habits of work) to be the most important. The profiles of objectives of the second type (N=17) were also very similar to each other but different from those of the first type in emphasizing more the areas E (use of language, spatial ability) and D (reasoning).

As far as the third type (N=15) was concerned there were only slight differences in the importance between the areas of objectives. This type considered the area D (reasoning) the most important.

The fourth type (N=7) was in a way an opposite of the third type on account of the greatest differences between the areas. In this group the profile of objectives in the extended course of mathematics in senior secondary school was most strongly deviant from the other profiles. On the whole this type considered the objectives of the effective domain the most important.

The fifth type (N=14) was a kind of mixed type, which approximated the first type, but deviated from it on account of the area A (ability to calculate, basic concepts) being less important. When comparing the ratings given by the different types the greatest differences concerned reasoning, the use of language and spatial ability, while the greatest agreement concerned ability to computation and application, that is, the areas that represent the most traditional areas in school mathematics.

5. Relationships to the Background Variables

Regression analysis was used to investigate the relationships between the notions of objectives and the background variables. The degree of explanation remained rather low, only a few per cent in most cases. The best predictor was teaching experience, which showed itself clearly in the areas of ability to compute and of basic concepts, that is, in the areas of mechanical, routine teaching. The more experienced the teacher was the more important he considered those areas to be. In the areas of the use of language and spatial ability the increase given by teaching experience in the variance accounted for was almost significant: the greater the experience the more important areas.

Sex appeared to be a predictor in the effective area, which was seen in women considering it more important than men. Studies in education explained ($p < .10$) the area of comprehending mathematics, further education those of the use of language and spatial ability and studies taken in mathematics at the academic level those of comprehending mathematics and participation and interest at the elementary level. The degree of urbanisation of the teacher's school district did not explain any area of objectives.

The degree of explanation rose to a statistically significant level only in a couple of cases, in most cases they were almost significant. Thus the background variables that were used were only very slightly related to the importance of objectives.

Explaining the types of teachers that were formed by means of the background variables was not significant even at the lowest ($p < .10$) level with any of the types. This may partly be due to the roughness of background variables when such a complex phenomenon as the teachers' notions of the importance of objectives in mathematics teaching is considered. Studies in education and sex came closest to significance.

6. Discussion

The starting-point of the research consisted of the objectives in mathematics teaching at the level generality that is used when the subjectwise objectives in education in the comprehensive school or senior secondary school are spoken about. As such the objectives are closely with the objectives expressed in the curriculum, but they are examined from a subjectwise view-point, that is, what is there in the instruction of a particular subject that can be used to implement the general objectives either materially or formally. The statements of the objectives of the study can be considered to have covered the objectives in mathematics teaching expressed in the official curricula as well

as the teachers' notions of the objectives.

The teachers' ratings of the objectives were considered to be attitude reactions based on different values, opinions and beliefs. It is the attitudes together with situational factors that are revealed in the teacher's classroom behaviour.

The relationships between the objectives and background variables remained slight. It can be stated that the studies taken at the university or in further education have, so far, had very little influence on the teachers' notions of objectives. This may partly be due to the fact that ratings of the objectives have a strong value component revealing values and value judgement prevailing in society. This view is also supported by the fact that pupils' notions of the objectives in mathematics teaching are very similar to the teachers' and student teachers' (Leino 1975d).

B i b l i o g r a p h y

- Bloom, B.S. (ed.) 1956. Taxonomy of educational objectives. Handbook I: Cognitive domain. New York: McKay.
- Gagné, R. 1967. Curriculum research and the promotion of learning. Tyler, R. et al. (eds.) Perspectives of Curriculum Evaluation. AERA. Monograph 1. Chicago: Rand McNally, 19 - 38.
- Husén, T. 1967. International study of achievement in mathematics. Stockholm: Almqvist & Wiksell.
- Koskenniemi, M. & Hälinen, K. 1970. Didaktiikka. Helsinki: Otava.
- Leino, J. 1975a. Matematiikan opetuksen tavoitteet peruskoulussa ja lukiossa oppikoulunopettajien arvioimina. Tutkimuksia n:o 37. Kasvatustieteen laitos. Helsingin yliopisto

- Leino, J. 1975b. Matematiikan opetuksen tavoiteprofiilit peruskoulussa ja lukiossa. Tutkimuksia n:o 39. Kasvatustieteen laitos. Helsingin yliopisto.
- Leino, J. 1975c. Matematiikan opetuksen tavoitteista. Tutkimuksia n:o 39. Kasvatustieteen laitos. Helsingin yliopisto.
- Leino, J. 1975d. Opettajien, opetusharjoittelijoiden ja oppilaiden käsitykset matematiikan opetuksen tavoitteista. Kasvatus 4, 243 - 247.
- Mager, R.F. 1970. Opetustavoitteiden määrittäminen. Helsinki: Otava.
- New school mathematics in nordic countries. 1967. Nordisk skol-matematik. Nordisk udredningsserie 9/1967.
- Niskanen, E.A. 1973. Research on educational aims. Julkaisusarja A: Tutkimusraportit n:o 3. Tampereen yliopiston kasvatustieteen laitos.
- Rummel, R.J. 1970. Applied factor analysis. Evanston: Northwestern University Press.
- Taba, H. 1962. Curriculum development: Theory and practice. New York: Harcourt, Brace & World.
- Tyler, R.W. 1934. Constructing achievement tests. The Ohio University.
- Wilson, J.W. 1971. Evaluation of learning secondary school mathematics. Bloom, B.S. et al. (eds.) New York: McGraw-Hill, 643 - 695.
- Wood, R. 1968. Objectives in the teaching of mathematics. Educational Research 10, 83 - 98.

MARJA LINNANKIVI

SOME RESULTS OF A RESEARCH PROJECT ON THE OBJECTIVES OF MUSIC
TEACHING IN THE OVERALL CURRICULUM OF SENIOR SECONDARY SCHOOLS

At the beginning of the school-year 1973-1974 a new music syllabus for senior secondary schools was introduced which has been co-ordinated with the syllabus for comprehensive schools (Committee Report 1970:A 5).

According to the objectives of the new syllabus, teaching should be implemented in a purposeful way so as to promote the overall development of the student's personality. The advancement of the student's capabilities and skills in music is ensured by instruction teaching situations in which the principles of receptivity and productivity, differentiation and integration are observed. According to the syllabus the objectives of music teaching are as follows:

1. The aim of music teaching is the advancement of the student's overall personality. When instruction is planned the objectives of arts instruction as a whole should be considered.
2. Students should be stimulated and given reasonable opportunities of musical activity and creative expression through music.
3. Students should be guided in the acquisition of musical knowledge and skills through the use of varied and student-centred teaching and study methods. One aim here should be to impart a knowledge of the position and importance of music from the viewpoint of the individual, of society, and of culture at large.
4. The advancement of positive attitudes towards music in students and the continued pursuit of musical interests should be envisaged when teaching.

5. Students should be guided towards group communication in music and in the understanding of the importance of such communication as a means of social participation.
6. The student's power of evaluation and of critically viewing his own musical activity and choice of music should be developed.
7. Students should be guided in planning their studies and their musical activity.

The material deduced from the objectives of the syllabus has been arranged into larger units with the stress laid, in the first school year, on contemporary music, music consumption (i.e. listening sound reproduction and the various means of such reproduction, local music facilities) and production (i.e. composing, sound composition, performing) and folk music.

In the second year, teaching centres on the music of the great composers and on the main musical epochs in Europe. Instruction is based on listening and other activities.

In the third year, stress is laid on increasing the student's knowledge of Finnish music and deepening his knowledge of the music of the great epochs.

As part of the research project carried out by Professor Erkki A. Niskanen on the objectives of education, the aims, the choice of material and its arrangement in the music syllabus of senior secondary schools will be looked into. To this end, teachers in senior secondary schools will receive a questionnaire in which special attention will be given to the above aspects and to the objectives in the syllabus that are, in the view of the teachers, best suited to further the development of positive attitudes towards music among students and promote a continued interest in the subject. The research results will then put to use in the project investigating the general aims of education and in the development of the music syllabus, and in the charting of basic study materials in music.

When education on the secondary level is reformed, the following problems will also have to be investigated with regard to music:

1. How well do the objectives set for music correspond to the general objectives set for secondary education as a whole?
2. How can music teaching be co-ordinated in senior secondary schools, vocational schools, workers' institutes and civic institutes?
3. How can music teaching best further the development of the student's personality and by what means is it possible to augment the attractiveness and learnability of music in education on the secondary level?
4. Which of the objectives of the current music syllabus for senior secondary schools in the teacher's view best further the development of positive attitudes towards music and music-activities?

KIRA OUTINEN

RESEARCH ON THE AIMS OF VISUAL ART EDUCATION

This study, which is a part of Professor Niskanen's project, adheres to the following principles: 1) the aims are expressed in terms which modern psychology uses in describing human behaviour and its educable dimensions, 2) the content area of visual art education is covered as completely as possible and 3) the aims are feasible so that the desired change in the educand is possible, and there are practical means to evaluate this change. To apply these principles I used as many relevant sources as possible.

The problems and design of the study

On average people in Finland spend five hours a day reading newspapers, listening to the radio, watching television or following the mass media in other ways (Ahmavaara et al. 1971). A great deal of mass communication is pictorial today, and a picture has great communicative power. As it is not bound to language, everyone can easily and quickly understand its message. But do we really understand the pictures we see daily? What is the influence of this pictorial flood? We are tempted to think and act as we see people think and act in pictures or films unless we know the way in which pictures and the pictorial mass media affect us. This is one reason why it is necessary to learn the language of the picture, and why visual art education is important. Lately teaching pictorial mass media has grown in importance beside the traditional areas of art education.

Teaching people to see has been the main aim of visual art education for a long time, although there have always been aesthetic, cultural, professional, therapeutic or personality development aims, too. In addition to other functions, every visual art lesson should be viewed as a means of learning to see, to understand what we see, to know why we see in this way, and the results of seeing certain things. The leading principle in visual art edu-

cation is learning through one's own artistic activities.

A visual art lesson is one of the few lessons that make personal contact with the pupils possible several times during the time available. The teacher can give every pupil feedback on how they have succeeded in their pictorial communication. While discussing the pupil's work the teacher can guide the pupil's perceptions and stimulate him to use new methods in his work. There are usually as many correct answers to a given problem as there are pupils, and so everyone can succeed in a visual art lesson.

At its widest the scope of visual art education is the whole visible world with all its phenomena (Komiteanmietintö 1970). The teacher must be able to select the proper items from the enormous mass of visual and pictorial phenomena and present them at the proper time and in the proper way to the pupils. The curriculum guides his choices, but the aims are usually formulated in such general terms that they leave the teacher quite a lot of freedom. The prerequisite for using this freedom is to know the basis - the "why" - of visual art education. When a teacher knows why he is teaching, he can select the ways necessary to reach the goals - provided he knows the "what" and the "how", too. This is often difficult because of the lack of a clear, comprehensive, flexible and well-founded system of aims.

This research concentrates on the basic problems of visual art education. The leading questions in the theoretical part are why we need visual art education and why it is an important subject. The task of clarifying the basis for and area covered by art education is guided by the belief that this subject has a far more important mental influence than we know or are even ready to admit. I wanted to find some verification to this assumption, too.

The following viewpoints are used in outlining the scope of visual art education: 1) the educational relevance of art education, 2) perception, 3) art education and modern art, 4) the current curricula in Finland.

An inquiry was made in order to find out what the main contents of visual art education are - what ought to be taught. The questionnaire can be viewed as an outline of a system of visual art educational aims. It is based on several factors: the Wilson (1971) model, the taxonomies of Bloom (1956), Krathwohl (1964) and Harrow (1972), the questionnaire of Niskanen (1973), the two studies of Hakkarainen (1971, 1972) and existing curricula.

There are 91 operationally defined statements in the questionnaire. The statements are classified according to six major content areas and eight art education behaviour categories. The statements are divided into behaviour categories as follows: perception 18, knowledge 21, comprehension 3, analysis 5, evaluation 3, appreciation 6, production 31, psychomotor domain 4. There are also three questions about art teaching in the questionnaire: 1) to talk about art, 2) to make art, and 3) to receive art. The testees were also asked to give their own comments.

The testing procedure

Four separate groups evaluated the importance of the statements according to a Likert-type evaluating scale from 1 (of little importance) to 5 (extremely important).

There are three groups from a private secondary school:

1) pupils from all eight grades (N=254), 2) parents of the pupils (N=78) and 3) teachers of various subjects (N=32). The fourth group consists of art teachers as professionals (N=40). Total N=404. The testing time was October and November 1973.

The purpose of the testing procedure was to determine the importance of the statements. At this stage of the research I found

it was not necessary to compare the results of the groups in the form of hypotheses to be tested. However, there are many variables that make the comparison possible. These variables include sex, age, grade, school achievement, interests, teaching subject, teaching experience and social class.

Results

The rank orders of the importance of the 91 aim statements were different in the separate groups. When determining the grouping limits, the results of the total group were used. In the category of the most important aims there are 28 statements, and in the category of the least important aims there are 19 statements.

The following eight statements can be viewed as the most important aims of visual art education (this is the list of the total group, and the rank orders of these statements in every separate group are from 1 to 9):

1. The pupil can co-operate and he lets his fellow pupils work in peace. He has a respectful attitude towards his own and his fellows' work and personal viewpoints (4.06, 1.03) (production, appreciation)
2. The pupil makes self-initiated, varied perceptions about his environment (4.04, 1.01) (perception)
3. The pupil is able to enjoy artistic activity and self-expression (3.83, 1.21) (appreciation)
4. The pupil takes a deliberate and selective attitude toward the truth of all kinds of pictures (3.75, 1.15) (evaluation)
5. The pupil can evaluate the usability, necessity and beauty of the products, and he can make his choices according to these considerations (3.74, 1.16) (evaluation)
6. The pupil can make precise perceptions about his environment (3.71, 1.09) (psychomotor domain)

7. The pupil knows that movies and television affect e.g. our world view (3.68, 1.21) (knowledge)
8. The pupil knows that people have different perceptions, and our perception is restricted and selective (3.62, 1.09) (knowledge)

These aims approach what are called the formal aims of knowledge education. According to the report of the comprehensive school curriculum committee (Komiteanmietintö 1970), the development of thinking is one of them. This means forming and using concepts, inferring, evaluating knowledge, solving problems, and when best, thinking creatively.

In addition to showing what these people regard as the most important aims of visual art education, this list explains why art is an important subject.

There are 17 statements in the list of the most important aims of the whole group. These statements are divided into behaviour categories as follows: perception 1, knowledge 5, evaluation 2, appreciation 4, production 4 and psychomotor domain 1. There are only four statements (or three because of the two-fold character of the most important statement) from the category of production in this list. From this result we can also infer that doing is only a vehicle in reaching the final goals of visual art education.

In the list of the least important aims of the total group there are 10 statements. Among these are statements regarding art history timing, remembering the names of works of art or artists, or the locations of famous art museums. There are also statements about analyzing the parts of a work of art, or identifying the tools or materials used in making a work of art. Such productional aims as making a film manuscript, sketching a textile model or drawing a comic strip were placed in this category. There is also a statement regarding capacity to draw exactly according to model. As for the least important aims, they can be classified either into the material aims of education aimed at knowledge (Komitean-

mietintö 1970 = the report of the comprehensive school curriculum committee includes e.g. certain facts from a subject and the relationships between these facts) or into the specific productional aims of visual art education. This result supports the conclusion made above at the end of the foregoing chapter.

The most important art teaching activity was to receive art, the next important was to make art and the least important was to talk about art.

How to proceed

The questionnaire of this study can be viewed as a sketch of an aims system for visual art education. The next step is to show what consequences the statements have in practice. This can happen by logical inference. The other way is to proceed empirically. My intention is to use both ways. The goal of these procedures is to answer the "what" and the "how" questions of visual art education.

After clarifying the bases for and practical consequences of the statements of aim, it is logical to examine their influence on the curriculum, teacher training and didactic questions. At this stage of the study it is necessary to analyze the influence of the intervening variables and make several retests with other groups, too.

B i b l i o g r a p h y

- Ahmavaara, Y. et al. 1971. Joukkotiedotus yhteiskunnassa. Helsinki: Kustannusosakeyhtiö Tammi.
- Bloom, B.S. (ed.) 1956. Taxonomy of educational objectives. The classification of educational goals, Handbook I: Cognitive Domain. New York: David McKay Company, INC.
- Hakkarainen, P. 1971. Peruskoulun opetussuunnitelman tavoiterakenne. Peruskoulun tavoitetutkimus II. Jyväskylän yliopisto. Kasvatustieteiden tutkimuslaitoksen julkaisu-
ja 114/1971.

20/11/71
P. H.

- Makkarainen, P. 1972. Peruskoulunuudistuksen ja opetussuunnitelman tavoitteiden määrittäminen. Peruskoulun tavoitetutkimus III. Jyväskylän yliopisto. Kasvatustieteiden tutkimuslaitoksen julkaisuja 149/1972.
- Harrow, A.J. 1972. A taxonomy of the psychomotor domain (A guide for developing behavioral objectives). New York: David McKay Company, INC.
- Komiteanmietintö 1970: A 4. Peruskoulun opetussuunnitelmakomitean mietintö I. Opetussuunnitelman perusteet. Helsinki. (POPS I 1970.)
- Komiteanmietintö 1970: A 5. Peruskoulun opetussuunnitelmakomitean mietintö II. Oppiaineiden opetussuunnitelmat. Helsinki. (POPS II 1970.)
- Krathwohl, D.R. (ed.) 1964. Taxonomy of educational objectives. The classification of educational goals. Handbook II: Affective domain. New York: David McKay Company, INC.
- Niskanen, E.A. 1973. Research on educational aims. Julkaisusarja A: Tutkimusraportit n:o 3. Tampereen yliopiston kasvatustieteen laitos.
- Wilson, B.G. 1971. Evaluation of learning in art education. Bloom, B.S. et al. Handbook on Formative and Summative Evaluation of Student Learning. (eds.) New York: McGraw-Hill Book Company, 501-556.

SINIKKA SAHI

WHAT IS THE BACKGROUND OF THE TEACHING OF HISTORY

I To determine the objectives for the teaching of history

1. The determinants of the curriculum

The determinants of the educational objectives are usually the following factors: the society, the learning material and the pupil. The effect of the determinants can be noticed, if these factors are emphasized in the curriculum, for instance like this:

a) In the society-centered school the intellectual and material needs of the society are stressed in the curriculum. To protect the existence and the future of the society there is a need for educated citizens who are able to carry out trusted duties planned for them. The society hopes to get back the money invested in education, when the educated people will take the responsibilities as effective citizens.

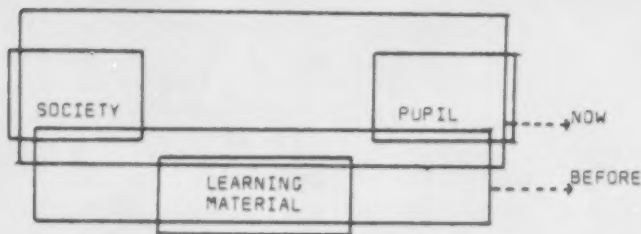
b) The subject-centered school considers it to be its main duty to transmit the structure and the facts to the pupil in the most efficient way possible.

c) The pupil-centered school wants to consider the needs of the pupil. The material is arranged bearing the pupil in mind. Pupil-centered learning includes the idea of the pupil's own desire to cope with forthcoming situations in the future.

In Finland the educational objectives are presented in the official curriculum which projects the dominating ideas of the range of the educational objectives. Because of the dynamic nature of the society, the objectives are planned continuously. The curriculum keeps changing and developing. Just now the local curricula are carried out according to POPS I-II, in which the role of the pupil is greatly emphasized. The learning material belongs to that

framework. The direction of the development during the last few years can be seen in this figure:

Figure 1. The change of the emphasis of the determinants of the educational objectives



2. Behavioural factors as the basis of the educational objectives

The educational objectives presented in POPS I-II are re-evaluated according to the pupil-centered directions by Erkki A. Niskanen et al. The general educational objectives are derived from the following areas of behaviour with various subclasses: the cognitive domain, the affective domain and the psychomotoric domain like Bloom et al. and Guildford. The objectives are grouped according to their importance determined by educational specialists. This ground offers a very interesting and promising situation: how much of the general behavioural framework can provide information for the development of the objectives of teaching history without destroying the essential characteristics of history.

3. The problems of planning the objectives for the teaching of history

It is a very difficult task to determine the objectives for the teaching of history, because:

- a) History, taught at school, is based on historical research.

The sources of teaching are historical studies carried out by scholars.

b) Different social and political approaches dominate the written history. According to neutrality the objectives very easily turn into empty and vague principles.

c) When the objectives are presented vaguely, the practical and didactic solutions in the teaching of history, as to the selection of the student material and the methods, do not seem to be supported by the objectives.

d) There is no useful research in Finland, which could tie together the general educational objectives and the features characteristics of history.

e) History teachers are not trained to develop the curriculum theoretically and operationally. Fortunately, the education of modern teachers diminishes this problem.

The curricula of history used in the Finnish schools date back to 1963 (VQQ) and 1970 (POPS I-II). The main objectives in those curricula are these:

VQQ (The curriculum in history for the secondary schools of the state)

1. Pupils must be well acquainted with the past history of our own nation and the past histories of the most important civilized nations in order to help them know and understand current international events and phenomena.

2. The area of teaching consists of the whole history of mankind.

3. First, pupils are acquainted with the history of our own country and that of European history, but they also learn about the development of the world history and the international co-operation.

4. The framework of teaching is social and political history, when the attention is given to both far-reaching events and phenomena and to economical, social and ideological factors.

POPS I-II (The consideration of the committee developing the curriculum for the comprehensive school in Finland)

1. Pupils are made well acquainted with the history of mankind through its most important phenomena. Pupils ought to see modern times as one stage in a continuous change and also to understand how the history of our own country contributes to the world history.

2. Pupils ought to be especially acquainted with social development, with the creation of nations and with the growth of commercial and industrial life. Teachers must give attention to both the top phenomena of the culture, the characteristic features of the life and the ideological habits of the majority of people in different cultures all over the world.

3. Teachers must provide material to their pupils for the shaping of the manysided description of man.

4. Teachers ought to make pupils understand and use this insight when studying social phenomena, political events and cultural features.

The qualities these two curricula have in common do not give too sufficient and specific educational basis to develop objectives in the teaching of history. The writer likes to have a philosophy behind these objectives as a firm theoretical framework. This could be done in the following way:

1. The essential features of history are mapped out.
2. The pupil-centered determinant is elected for the other stage.

3. The essential features of history are compared with the behavioural objectives.
4. The teaching is constructed by the means of the common features of history and behavioural objectives.

II The Essence of History

1. The starting point

Historians have different opinions according to the philosophy of science. The writer selected Pentti Renvall's (the former professor of Finnish and Scandinavian History at the University of Helsinki) views on history. He presents a so-called genetic tradition. According to this insight the historical events and phenomena are attached to the other events and phenomena both horizontally and vertically. In Finland, where nationalism keeps very popular, the dimension of the national development is emphasized. Renvall's way to think offers many close connections with the holistic theories and the field theories of psychology and sociology. Renvall comes near the man of the past parallelly with the scientists of the behavioural sciences. In his studies the effects of man's behaviour are presented in historical events. Humanity leaves its deep mark on Renvall's science.

For Renvall the following five features are essential:

1. The most important element for the historians is objectivity.
2. The historians try to create a dynamic picture of human life.
3. The historical truth is a complete picture of historical facts studied.
4. Man has a need to offer his own values to the following generation. Man has generated a tradition and this is the picture transferred by history.

5. The renewal of the tradition means the constructive and critical clarification of the dominant values.

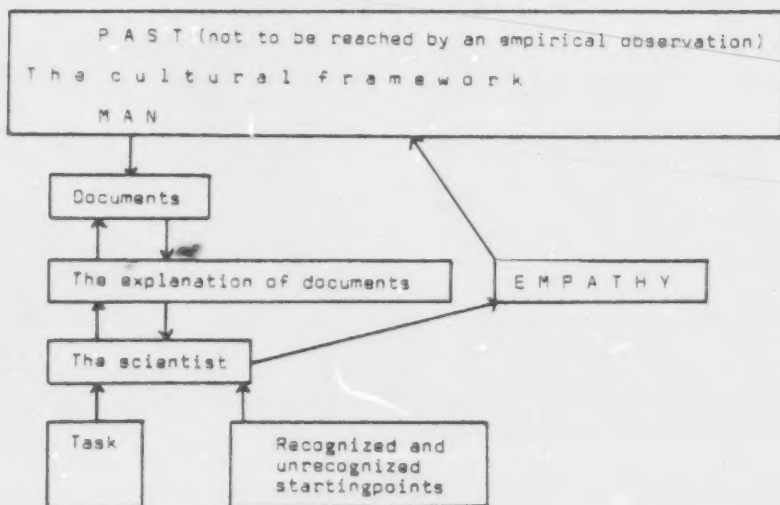
This is the basis which the writer used when developing the following general statements for the description of the essence of history.

2. Objectivity

The following facts belong to the objectivity in writing history:

- The creation of a versatile description of man is based on the evaluation of the man of the past within the framework of his own time.
- The ability to think empathically is to understand the cultural framework of the man of the past.
- The understanding of the self-determination of history is the ability to find out from each time the reliable explanations of the facts. The events are documented.
- The scientific insight is needed. This has its foundation in a skillful and many-sided study of sources and in a critical and creative interpretation of sources.

Figure 2. Objectivity in practice

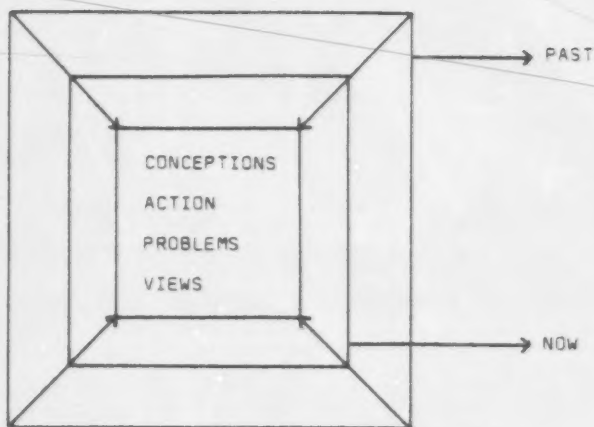


3. A complete picture of history

Drawing a complete picture of historical facts is based on the following principles:

- The contents of the abstract principles can be explained by the concrete events behind them.
- Modern problems can be explained by the historical past.
- Culture is very expansive by its nature and is in the mind of the individual.
- The development of social, political and intellectual affairs must be outlined within the whole situation where the man of the past lived.
- Every man belongs to the cultural framework of his own time.

Figure 3. The historical wholeness



4. Dynamic features of history

Dynamic features in history are as follows:

- The institutions acting in the society belong to the human life.
- The social-political reality is behind the rules and the laws. This development happened during the different historical decades.
- Historical events are always influenced by acting humans.

Clearly, the dynamic features of history can be found out, for instance, in the development of Finnish democracy.

Figure 4. The dynamic features of the Finnish democracy described by the institutional way.

PROCESS			THE FEATURE OF DEMOCRACY
Finland together with Sweden until 1809	Finland together with Russia until 1917	Independence	
The peasant freedom	The awakens of the national selfconsciousness The national identity	The basic freedom of the citizen The national right of selfdetermination	→ FREEDOM →
The society divided into estates	The crumbling of the class distinctions The reformation of the Diet and its consequences	The national enforcement The connections and the opposite features of different parties Social policy	→ EQUALITY →
The right to take part in jurisdiction and in legislation	Own laws	The continuing work of the legislation	→ JUSTICE SECURITY →
The regime guided by the ruler The former fourcameral Diet Congregational autonomy	Representative body under the ruler Communal autonomy The origin of the political parties The begin of the organizations in stressing	Parlamentary way to act Continuous legislation Organized stressing groups The democratizing of the communal autonomy	POLITICAL → → POWER

→ means that the development is continuous by its nature

5. Tradition

The importance of the historical tradition can be featured like this:

- Human values are transferred to new generations.
- Traditions are practical guides to carry out the duties given by the society.
- Traditions confirm men's individual features.
- Traditions are the organized memory of man.

6. The renewal of traditions

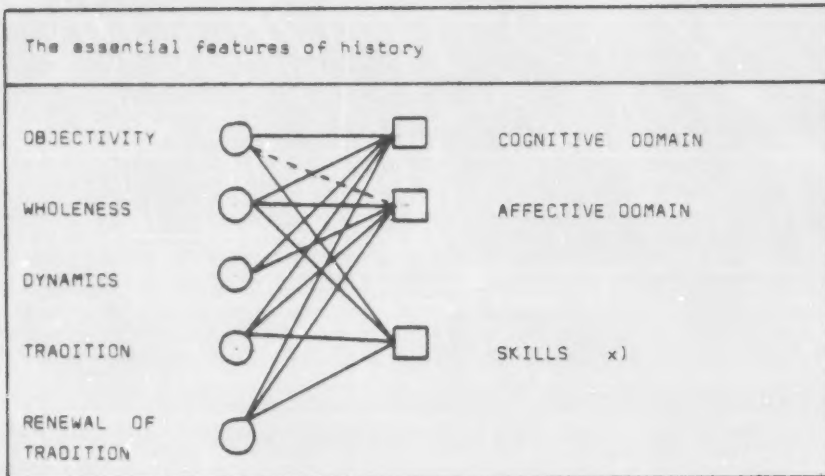
Traditions are not merely generated in the past, but according to the dynamic nature of society, they also renew. This happens,

when:

- People weigh and clarify the dominating values constructively and critically.
- People have a positive attitude towards developing the social duties of their own.
- People have a flexible identity. It is needed, for instance, when people move from the agrarian society to the industrial life, when people move from Finland to Sweden to work and so on.

III The essential features of history and behavioural objectives compared with each other

When the writer compared the characteristic features of history with behavioural objectives, they seemed to have some relation to each other. In this article the comparison is not detailed, because in order to construct exact objectives further studies and semantics are needed.



x) In history we cannot have psycho-motoric objectives. The writer used the term skills to describe the nature of the study and the use of the historical knowledge in practice.

IV The development of the objectives for the teaching of history according to the essential features of history and the behavioural objectives

The objectives based on the essential features of history show us that it is quite achievable to create the objectives for the teaching of history parallelly to the general behavioural objectives of education. History tells us about living people in the past. We can reach knowledge about modern people by themselves or we can observe them. But it is no use to do so without comparing these features with the actions of men in the past. With this method we can get a deeper insight into life.

When we approve this characteristic way to approach the man of the past like historians, we can provide a confidential basis to the objectives of the teaching of history. At the same time we also approve the main characteristics of the behavioural objectives of education by a very natural way.

The main elements of the developing the objectives for the teaching of history are these:

- The teaching of history must consist of the characteristic features of history.
- The behavioural objectives might be projected in the teaching of history.
- The behavioural objectives cannot be used in the teaching of history artificially, if they do not fit into the curriculum because they destroy the essence of history.
- It is a very urgent task to carry out the scientific work in order to develop these objectives. The developers must be familiar with historical research as well as education.
- The objectives must not be planned only for their own sake, but they must be operational both in history and in education.
- The objectives must not dominate the teacher very strictly, but they must orientate and map out the teaching methods.
- There is no need to evaluate all of the teaching according to the objectives.
- The main importance of the objectives in the teaching of history is to motivate pupils to be interested in the action of human beings in the past, in the present and in the future.

The writer was benefited by the following literature

- Bjørndal, B. 1969. En studie i nyere amerikansk læreplantenkning. Scendinavian University Books. Oslo.
- Bloom, B.S. (ed.) 1956. Taxonomy of educational objectives. Handbook I: Cognitive domain. New York.
- Botein, Stephen, Leon, W., Novak, M., Rosenzweig, R., & Warden, G.B. (ed.) 1977. Experiments in history teaching. Harvard-Danforth Center for Teaching and Learning. Cambridge, Massachusetts.

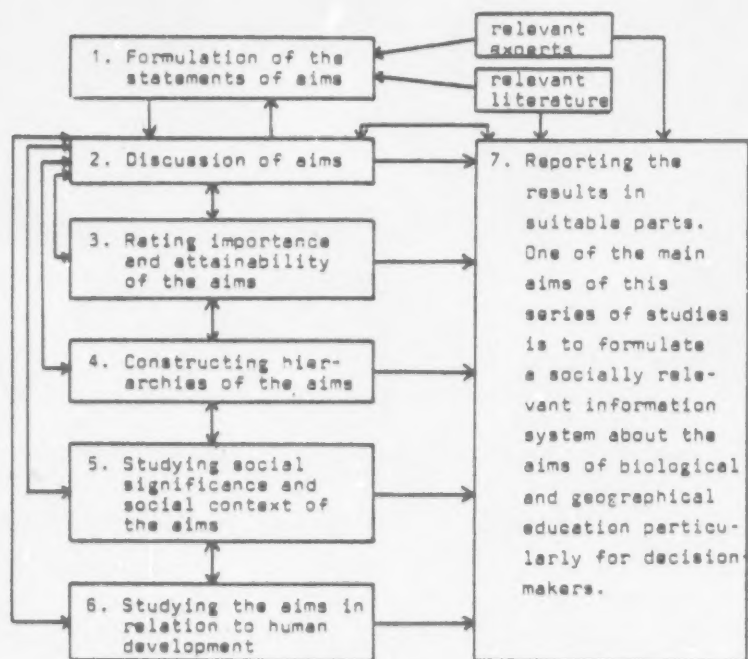
- Castren, M.J. 1969. Problemtällning för undervisningen i historia och samhällslära. Historienopettajien vuorokirja (HOVK) IX. Helsinki.
- Jarolimex, J. 1967. Social studies in elementary education. Third edition. New York.
- Kretwohl, D.R. et al. 1964. Taxonomy of educational objectives. Handbook II: Affective domain. New York.
- Mays, P. 1974. Why teach history? University of London Press. London.
- Muessig, R.H. 1971. Social studies. The Teachers Handbook, Glenview. Illinois.
- Newmann, F.M. & Oliver, D.W. 1967. Education and community. Harvard Educational Review 37:61-106
- Niskanen, E.A. 1973. Research on educational aims. Parts I-III. Tampereen yliopiston Kasvatustieteen laitos. Julkaisusarja A: Tutkimusraportit N:o 3.
- Oriandi, L.R. 1971. Evaluation of learning in secondary school social studies. In Bloom, Benjamin et al. Handbook on Formative and Summative Evaluation of Student Learning. New York.
- Purpel, D.E. & Belanger, M. 1972. A book of essays and readings. Curriculum and the cultural revolution. McCutchen Publishing Corporation. Berkeley, California.
- Renvall, P. 1969. Historiens betydelse för atomälderns människa. HOVK IX. Helsinki.
- Saari, S. 1973. The essence of history - The background of the teaching of history (unprinted Finnish work). The Department of Education. University of Helsinki.
- Spradley, J.P. (ed.) 1972. Culture and cognition: rules, maps, and plans. Chandler Publishing Company. New York.

MAURI AHLBERG

RESEARCH ON THE AIMS OF BIOLOGICAL AND GEOGRAPHICAL EDUCATION

The plan for this study series is presented in Figure 1.

Fig. 1. The main parts of the study series and their most important relations



Part 1. In spring 1975 I formulated 35 verbal descriptions of aims for biological education and 38 aims for geographical education in cooperation with some of the best experts in Finland. I received help e.g. from the National Board of Schools (Kouluhallitus) and from the Union of teachers of Biology and Geography in Finland.

Part 2. The whole series of studies is planned as a large-scale, scientific discussion of aims. E.g. some reformulations of the verbal descriptions of aims have already been made.

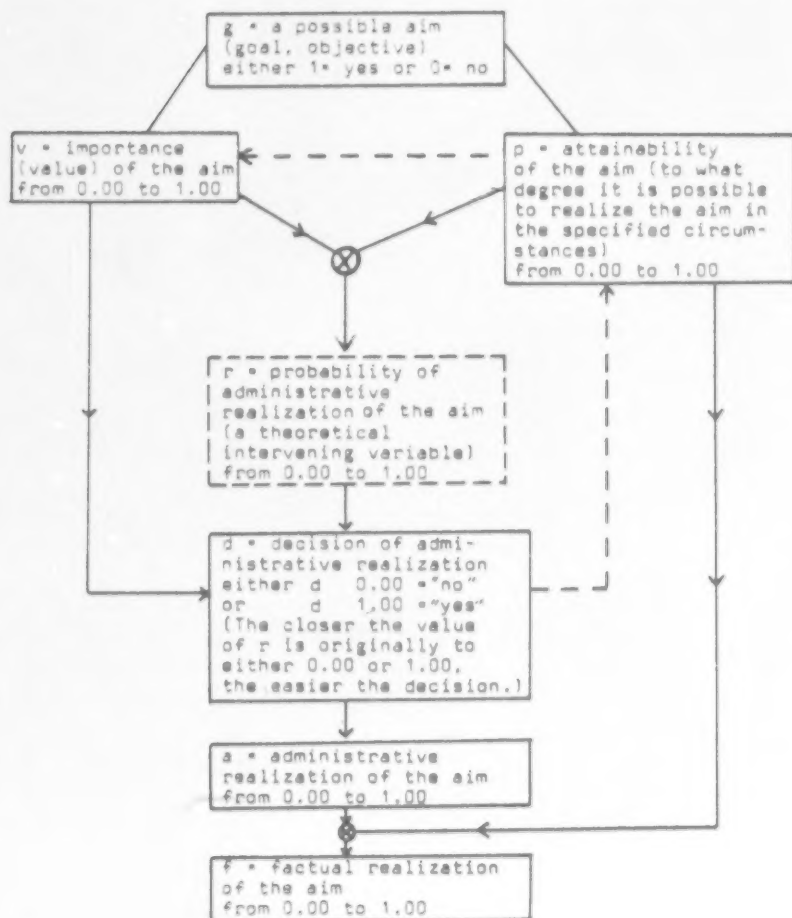
Part 3. Rating importance (scale 1-7) and attainability (scale 1-5) can be seen as a quantitative discussion of aims. The reason for rating both importance and attainability of the same aims is given in Fig. 2. Later on I will describe the model in more detail. In this context it is sufficient for us to understand the following three points:

- 1) If estimated attainability for one reason or another is zero or near zero, the probability of administrative realization is also zero or near zero.
- 2) Even if we do not know the attainability of the aim at present or in a future situation, we can make a decision on administrative realization. If the attainability of the aim in the specified circumstances is zero, however, this will prevent the factual realization of the aim in these circumstances. In order to make rational decisions we ought to estimate the attainability of the aim in the specified future situation in one way or another. As a first step towards this estimation one can gather information on the estimated attainability of the aims in the present situation as has been done in this sub-study.
- 3) The first equation ($r = vxp$) corresponds the expected utility maximization model of the decision theory (e.g. Edwards 1978, 108).

In the model I use the word attainability in the same loose sense as e.g. Nisbet (1968 (1957), p.26), uses the word attainable.

But in the questionnaire attainability was made concrete by using the number of pupils who can attain the aims as a criterion (according to teachers' implicit criteria).

Fig. 2. A functional model of human goal-oriented activity: from setting an aim to its factual realization



The most important postulations are the following approximate equations:

- 1) $r = v \times p$
- 2) $f = a \times p$

Note: most information feedback loops have been deleted from this illustration.

The scale was as follows:

- 1 = nobody or only a few pupils (a few percent)
- 2 = about a quarter (25 %)
- 3 = about half (50 %)
- 4 = about three quarters (75 %)
- 5 = everybody or almost everybody

Because teachers effect their pupils' achievements, any low expectations on attainability of some important aim can be a real hindrance to its attainment. That is one reason why it is important to make a survey of both importance and estimated attainability of the aims. If large groups of teachers seem to think that attainability of some important aim is very low, we ought to study why they think so. Perhaps we should seek answers to questions like these:

- 1) Does it correspond to reality?
- 2) What could be done in order to make the aim more attainable?

Most of the raters were biology and geography teachers who had subscribed to the journal of their union. The raters were divided randomly into four groups which had their own rating task. The first group rated the importance of the 35 aims of teaching biology. The second group rated the importance of the 36 aims of teaching geography. The third and fourth groups rated their attainability. Every group rated its aims in relation to three age levels:

age level	grades	school level
7-13	1-6	lower primary school
14-16	7-9	upper " "
17-19	10-12	secondary school (high school)

Because rating was rather time consuming it was decided that teachers could rate upper primary school alone if they feel that they do not have time enough to rate the aims for all three school levels. Thus there is a different number of ratings at each school

level. However, there is about one hundred ratings at each school level. This is important for the later multivariate analysis of data.

Some hundred summer university students and pupils (grades 5.-12.) and some university teachers have also rated the aims, forming important reference groups.

There are plans to use other groups, e.g. parents, as raters later on.

Part 4. At least at first the hierarchies will be constructed in relation to the dimension which goes from utmost instrumentality to utmost ultimativity. First it was thought that the hierarchies would be formed using the pair comparison method.

In autumn 1975 university teachers acted as raters. Experience showed that the pair comparison method would be too time consuming for large groups of raters (e.g. for school teachers). Now we plan for school teachers to rate the aims using the same kind of questionnaire as in part 3.

The pair comparison method will probably be used later on when the pair-wise distances (scale 0-9) of aims are estimated.

When we know the hierarchical level and pair-wise distances of the aims we can construct rather exact hierarchies, especially when we gather comments from university and school teachers who are willing to act as commentators on the first versions of hierarchies. We hope that the hierarchies will help both in the planning of teaching and in teaching itself. In any case they could be a step towards this kind of hierarchy. The hierarchies could continually be improved via continuous discussion of aims and via relevant psychological and educational research results.

It is hoped that the tops of hierarchies would be of help when decision-makers evaluate the social significance of various school subjects.

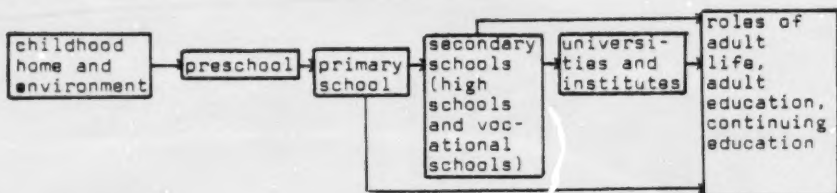
Professor Niskanen and I have invited all interested educationists and psychologists to contribute this research as raters and commentators in formulating the hierarchies of the aims (Niskanen & Ahlberg 1975).

Part 5. In summer 1975 I made a comparative study of the aims of teaching basic biological sciences at universities and of the qualifications of biologists (Ahlberg 1975). It became evident that the statements of aims often refer to social contexts of biological sciences and thus help one to grasp the social significance of biological sciences. A comparative study of the aims of teaching geography at universities and of the qualification of geographers is planned.

Part 6. When the aims of teaching biology at the university level were studied it became clear that most of verbal descriptions of the general aims do not differ from the aims used at the school level. The formulation is often the same. Of course the exact content is more demanding at the university level, but the same general verbal descriptions of aims seem to cover it as well. It thus seems that the general verbal descriptions of the aims of biological and geographical education often, if not always, refer to open-ended desired development.

The developmental frame of reference for studying the aims is presented in figure 3.

Fig. 3. The educational stages and environments (sensu lato)



My conception of the aim is similar to that of e.g. Richmond (1971, p. 177), who says that education is always "an unfinished business for which death is the only terminal behavior." Let us take two examples.

1) At the primary school level in Finland an aim is for the pupil "to know about one hundred of the most important plant species." We also have an exact list of these plant species. At first sight it seems that here we have defined a specified state to which we are aiming. However, I argue that even in this case in reality we are aiming at getting the pupil to progress in the desired direction (dimension) of human development. The teacher must often be satisfied with smaller steps towards the specified aim. Some pupils will never fully attain the clear-cut aims which we are setting for them. We as teachers and parents must be glad when they just make progress towards these aims. And we are also glad when a pupil progresses (develops) over the aim that we set for him. We are satisfied e.g. when some pupils know more than just those one hundred plant species. It seems that in reality we do not strive towards any clear-cut psychic states but rather try to make pupils progress along dimensions of desired human development. Teachers and parents are usually satisfied with progress in every good direction if there remains some reasonable harmony between these different dimensions of desired human development. Knowing the most important (and most common) plant species is a dimension of human development along which we usually begin to progress in the childhood home even before school.

2) Perhaps an even clearer example is e.g. "pupil/student understands the main features of the structure, function and development of the most important ecosystems." Most of us have probably at some stage in school learned to look at the inter-relations between plants, animals, micro-organisms and their environment. In each grade of Finnish primary school one studies more about the most important ecosystems. The same continues in Finnish secondary schools. And one can progress along this same dimension of human development even in university and after

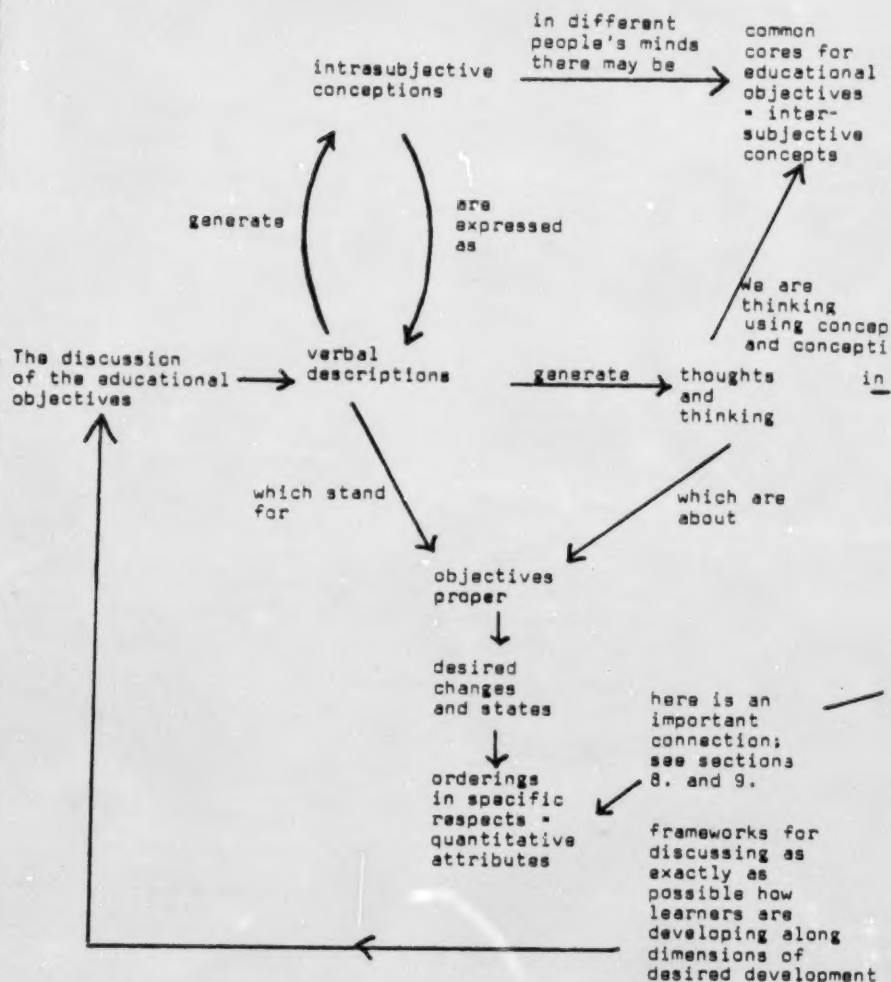
university in professional life. Those biology students who specialize in ecology in a university only understand more of the structure, function and development of the most important ecosystems. An ecologist (e.g. a professor of ecology) only has a deeper understanding of the same things (the main features of the structure, function and the development of the most important ecosystems) than most educated adults probably have at some level.

When in part 3 I spoke about the attainability of aims one might wonder how this fits the concept of an aim as a dimension of human development. As e.g. Klausmeier (1975, p. 105-106) points out, in such cases teachers use implicit criteria in terms of the age of the child and other characteristics of the situation. It seems almost certain that in Finland teachers primarily use textbooks of their pupils' school level as a criterion. Probably the same school textbooks determine what teachers teach and what they expect pupils to master. (Probably very rarely do they evaluate anything but achievement in the cognitive domain.)

Part 7. In reports on this series of studies I have also examined the main concepts of the study area (Ahlberg 1977;1979). I have examined how people use certain concepts. I have tried to explicate what seems to be the core of prevalent usage. This viewpoint is important when one tries to formulate a socially relevant information system. Such work must be communicable to decision makers whose educational background varies a great deal. I have made an integrated theoretical framework for objectives of lifelong education (Ahlberg 1977;1979), (Fig. 3).

Acknowledgement

I had the opportunity to discuss the functional model of human goal-oriented activity with Mr. Kari E. Nurmi. My thanks are due to him for his comments.



g. 3. A synthesis of some basic features of the phenomenon of "educational" (N.B. Only some of the most important connections are depicted.)

Literature

- Edwards, W. 1978. Decision making: psychological aspects.
In Kruskal, W.H. & Tanur, J.M. (Ed.) 1978. International
encyclopedia of statistics. New York: The Free Press,
107-116.
- Klausmeier, H.J. 1975. Learning and human abilities. Educational
psychology. 4th edition. New York: Harper & Row.
- Nisbet, S. 1968 (1957). Purpose in the curriculum. Sixth im-
pression. London: University of London Press.
- Niskanen, E.A. & Ahlberg, M. 1975. Wanted: expert contributors
in research on educational aims (goals, objectives).
Acta Psychologica Fennica IV, 130.
- Richmond, W.K. 1971. The school curriculum. London: Methuen.
- Ahlberg, M. 1975. Teaching basic biological sciences and the
qualification of biologists particularly from the
view-point of aims. Institute of Education, University
of Helsinki. (in Finnish.)
- Ahlberg, M. 1977. Towards a theory of objectives (aims, goals)
of lifelong biological and geographical education.
The thesis for Fil.Lic. degree in the educational
sciences. The university of Helsinki. (in Finnish.)
- Ahlberg, M. 1979. A theoretical framework for educational
objectives (aims, goals): a contribution to curriculum
theory with particular reference to the viewpoint
of lifelong education. (manuscript)

JARKKO LEINO

SUMMARY

1. Introduction

At the first stage of the research project on educational aims an attempt was made to state the general aims of education by means of elements of behaviour. The whole area of behaviour was divided into three parts, which are the cognitive, the affective and the psychomotor domain. In stating the objectives of the cognitive domain the theoretical basis was offered by Guilford's Operations completed with the categories of Analysis and Synthesis of the Bloom Taxonomy. An attempt was made to select the aims of the affective domain in a way that would cover interests, attitudes, values and the integration of personality. The basis of the aims of the psychomotor domain is to be found in Guilford's factors. (Niskanen 1973, 3-4)

At the second stage studies of subjectwise objectives, whose abstracts the present bulletin contains, will give a tentative basis for decision-making as to how to emphasize the subjectwise objectives in curricula. In the studies or research plans the starting-point has most often been offered by the objectives as expressed in the existing, official curricula. By specifying them so as to concern pupil behaviour, by separating their wide combinations of skills and contents into smaller components and by completing the collection of objectives with information derived from underlying theories when necessary, the statements of subjectwise objectives have been formed. In order to decrease the great number of objectives attempts have been made to discover the central dimensions of objectives by having teachers rate the importance of objectives. The interpretations of these objectives give us a point of comparison with the theoretical background of the general aims.

In this summary attention is given to the starting-point and strategies of the studies, the relationship between the most important objectives and the theoretical background of the project, the clustering of objectives into fewer dimensions and problems related to them.

2. Starting-points and Strategies of the Studies

Part of the subjectwise papers are articles while part consists of study plans or abstracts of studies already carried out.

Iskala uses the schematic structure developed by Stotland and Canon as the theoretical framework of his study of teacher preferences. In his model the elements or schemes influence as intervening variables on the responses of an individual. Schemes are rules, which differentiate invariances of events, influence the selective retention of experiences in memory storage, and guide the behaviour of an individual. Aims can be regarded as schemes. They represent different levels, form hierarchies and also change with new experiences (Iskala 1974, 24-30). The theoretical basis of the structure of aims is offered by the Aschner and Gallagher taxonomy, which is closely related with the operations of Guilford's SI-model. The statements of objectives have been taken from the comprehensive school curriculum and the Niskanen's research (1973, 33-34). The study concentrates on certain themes of the teaching of religion, literature and ethics, thinking processes related with them and their relationships with the general aims of education. Information was gathered by means of questionnaires given to teachers. It was later on completed with observation techniques of teaching situations.

Kuikka's research concerns objectives of religious education based on our official curricula. The importance of objectives was rated by teachers for four different levels (preprimary, lower and upper levels of the comprehensive school and senior secondary school). The theoretical framework of the objectives was based on the Bloom and Krathwohl taxonomies, which cover the cognitive and the affective domains of human behaviour.

Sahi's article describes the objectives in the teaching of history within the wider context of education. She forms the central determinants on which the objectives should be based. According to Sahi the official curricula such as they exist at present do not offer an adequate educational basis for the development of the objectives in history teaching. Therefore she deals with the philosophical background to the objectives.

Ahlberg's research plan consists of a wide research project concerning the aims of teaching biology and geography. His plan consists of forming the aims, scientific discussion on them, rating their importance and attainability, constructing a hierarchy, investigating their social importance and relating them to the general aims of education.

In his research on forest education Lehto employs the objectives expressed in the existing curricula as the starting-point. Their importance was rated by different professional groups in the field of forestry. Based on these preferences an attempt was made to find out the ideologies of different professional groups in the objectives.

The instrument used in J. Leino's study of the objectives in mathematics teaching is constructed on the basis of existing curricula and committee reports. The theoretical framework is the Wilson taxonomy based on Bloom and Krathwohl. Factorizations of teachers's ratings are used to form profiles of objectives which describe the objectives and their weightings in mathematics teaching at different levels. Teacher's ratings are considered to be attitudinal reactions.

A-L. Leino's study of the objectives in foreign language instruction uses Valette's two-dimensional categorization. One dimension consists of the general cognitive and psychomotor behaviour and the other of the content areas of foreign language instruction. The affective area consists of interests, attitudes, values and the integration of personality. The subjects are foreign language teachers, teacher trainees and pupils who rate the importance of objectives at different levels of school.

Jääskeläinen's research plan is concerned with the importance of objectives to physical education. The purpose is to make use of differing point-of-view in forming specific objectives of instruction and study their importance and interrelationships. The intention is furthermore to create specific objectives of physical education for each grade. They would include all the three domains of behaviour (psychomotor, cognitive and affective-aesthetic)

Linnankivi's research plan is concerned with the objectives of music teaching and the proper content for implementing those objectives at the upper grades of the comprehensive school.

At the first phase of her research Outinen has studied the most important aims of visual art education by means of an extensive questionnaire. Later on her purpose is to investigate the results in actual teaching situations.

Latola's research plan deals with the objectives of home economics teaching in the comprehensive school. The objectives will be based on the curriculum and their importance will be rated by home economics teachers.

3. Ratings of the importance of the objectives

The project is based on Niskanen's research (1973) in the empirical part of which subjects were given forty general aims of education to be rated according to their importance for pupils between the ages of 7 and 18. The aims of the cognitive and the effective domains were considered to be the most important while the least important concerned the psychomotor domain, the field of art and memory. Three of the most important aims were ability to apply knowledge, the development of responsibility and the ability to work independently and purposefully. The following were also considered to be quite important: creating new information, understanding it, developing social responsibility and positive attitude towards study.

Iskala included the same general aims except those concerning the psychomotor domain, art and technical interests. The importance of the aims was rated for pupils between the ages of 13-14. The most important ones were the same as those in Niskanen's research. The least important ones were memory, evaluation of information and international understanding. Because those two studies had different groups of raters and also because the target groups of the objectives were different in their ages, the similarity of the results is suprising. Iskala's study included other general aims of education as well but they have been left out in this connection because they have been stated in a different way and also because one statement often consists of different kinds of things. It is obvious that a fairly great agreement on the general aims of education can be reached when the terminology of scientific research is used.

The most important objectives in religious education were in the effective domain regardless of the pupils' ages. The most important objectives in Kuikka's study were the development of mental health, self-confidence, responsibility and love for one's neighbour, God and religious values. These objectives concerned each age group. The least important objectives varied according to ages: for the younger pupils they were ecumenics and other religions for the older ones the aesthetic values of Christian art and dialogue with an atheist.

The most important objectives in mathematics teaching concerned the cognitive and the affective domains. In J.Leino's study the most important objectives of the comprehensive school were ability to compute and solve mathematical problems of everyday life, but equally important was joy given by productive work. In the general course of the senior secondary school skills and knowledge connected with the problems of everyday life as well as objective evaluation of results was emphasized. In the extended course the most central objectives were the exact formation and use of concepts and ability to work systematically. The least important objective at each level was knowledge of the history of mathematics.

The most important objectives in foreign language teaching are in the affective area. According to A-L.Leino's study the most important objectives regardless of the school level are decreasing the fear to speak the foreign language and developing positive attitude towards the study of language. The next important objectives concerned discrimination ability in the cognitive-psychomotor domain. The least important were knowledge of literature and interest in the study of foreign language in one's spare time.

The most important aims of visual art education in Outinen's research are appreciation of one's own and the other's work, ability of independent perception and enjoyment given by creative work. The least important are remembering artists' names, the locations of famous museums and understanding historical perspective in art.

The relative importance of individual statements can in some cases give a wrong impression on their relationship with certain ratings concerning the whole areas of behaviour. Factor-analyses (and related methods) were therefore used in some studies to give information on which to base clustering of objectives into wider unities and to compare the importance of these unities with each other.

Thus in J.Leino's study of the objectives in mathematics teaching one can see the weightings of the objectives change with the level of schooling. Ability to compute and use basic concepts is the most

important area of objectives at the lower levels of the comprehensive school, but also attitudes and habits of work are quite important. At the upper levels of the comprehensive school attitudes and habits of work become more central. Reasoning in its different forms is the most important objective only in senior secondary school together with attitudes and working habits.

According to A-L. Leino's study the most important clusters of objectives are knowledge of the elements of the language and ability to discriminate the elements and rules and patterns of spoken language. At the upper levels vocabulary becomes more important. Only in senior secondary school do grammar and communication become more central. Knowledge of foreign culture is not important at any level.

The most important objectives in forest education are according to Lehto's study ability to communicate verbally, the teaching of raw wood supply and administrative skills.

4. Clustering the objectives

On account of the great number of objectives and also possible overlap between them attempts have been made to group them into wider units. The Bloom Taxonomy can for example be used as a theoretical basis for grouping them, but other taxonomies could as well be suggested. It is not however very easy to place many traditional subjectwise objectives into the categories of any taxonomy. In foreign language teaching for example discriminating between two spoken words or oral translation concern the cognitive as well as the affective areas and consequently do not have a proper category in the Bloom Taxonomy for instance. In the same way many objectives of religious education do not fit into the framework of the Taxonomy very well according to Kuikka.

Another basis of grouping has in the studies been the empirical method in which factor-analysis is applied to the ratings of the objectives. The statements of objectives with the highest loadings are combined and interpreted according to what the statements have in common. This method also has its problems.

Even in Niskanen's study which forms the basis of the project some objectives like those concerning interests and attitudes were also weighted with content (1973, 33-34). A factor-analysis of the statements did not yield for example a factor of its own of interests or that of positive attitudes.

A positive attitude towards parents was loaded on the same factor as a positive attitude towards teachers, but a positive attitude towards peers and study were loaded on quite different factors. Instead statements of objectives concerning art, in which the term art appeared in some form, were loaded on the same factor. In the same way those statements of motor skills in which the term motor appeared were loaded in the same factor, but instead the objective of muscular strength had a loading on a different factor.

From the results we can draw the conclusion that the basis for forming a dimension of objectives can vary a great deal depending on quite different things. The linguistic form in which the statement is expressed can have an impact even though it can't be considered a very important factor in the light of studies carried out. The forming of a dimension can also be due to the content of the statement or the type of behaviour. Of course all these aspects can also influence together, forming a mixed factor.

In the empirical part of Niskanen's research the forming of factors was evidently attributable to the co-influence of many different agents, which made it difficult to interpret many factors. Also the number of the factors was so great (8 factors) and the variance per factor so small that interpretation was difficult. The statements of objectives were more logically grouped in Iskala's study, in which the number of factors of statements of objectives was rather small (3-4 factors). Three of the most central factors were general adaptation, independence of thought and mental health. It is to be supposed that a psychomotor factor would have been found, had equivalent objectives been included in the study.

The inclusion of content in the subjectwise objectives can be dealt with in many different ways. It can be made very general,

like mechanical computational skills in the objectives of mathematics teaching, so that it appears as a necessary subskill in all school mathematics. In the same way knowledge of grammar is a very general objective in foreign language teaching. Content can also be made very specific in the objectives like for instance the ability to solve quadratic equations in mathematics so that the content really has a great influence on how the objective is related. When comparing the ratings of the importance of objectives the decisive thing is that the inclusion of the content should happen at the same level in each objective. This was not true in all studies of objectives, which made it rather difficult to interpret the factors. After factorization the grouping of the statements happened either by means of the simple sums or weighted sums of the original variables or alternatively by means of factor-scores. Each method has its advantages or disadvantages. The wider unities thus received make it possible to compare and group the areas of objectives as well as individual ideas of objectives. The subjectwise studies of the project published so far offer good examples of such continuation studies.

5. Discussion

After the studies of subjectwise objectives the original purpose was to determine the specific weightings of each subject in the general aims of education. This would make it possible to proceed in a more uniform way from the more general aims to subjectwise objectives in the subject-centered curriculum but would also give possibilities for other kinds of curricular solutions.

When giving attention to the studies of the objectives of particular school subjects one can't avoid the impression that gathering the results is quite problematic. This results from the fact that the traditional objectives of different school subjects are not based on any particular theoretical framework. Different theoretical starting-points or statements based on no theoretical background make it difficult to gather the results. This is most difficult in such subjects in which the concepts used are vague or difficult to operationalize or conceptually divided into more specific parts. It may well be that at the first stage of gathering the results one has to draw simplified conclusions. The rather simplified concepts yielded by them will have to be completed later.

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